

**SECTION 01 10 00.1005  
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## 1.0 PROJECT OBJECTIVES

1.0.1 The project objective is to design and construct facilities for the military that are consistent with the design and construction practices used for civilian sector projects that perform similar functions to the military projects. For example, a Company Operations Facility has the similar function as an office/warehouse in the civilian sector; therefore the design and construction practices for a company operations facility should be consistent with the design and construction of an office/warehouse building.

### Comparison of Military Facilities to Civilian Facilities

Military Facility	Civilian Facility
Army Fire Stations (AFS)	Fire Station

1.0.2 It is the Army's objective that these buildings will have a 50 year useful life. The design and construction should provide an appropriate level of quality to ensure the continued use of the facility over that time period with the application of reasonable preventive maintenance and repairs that would be industry-acceptable to a major civilian sector project OWNER. The facility design should consider that the Army may repurpose the use of the facility over the 50 year life. The Army's intent is to install products and materials of good quality that meet industry standard average life that corresponds with the period of performance expected before a major renovation or repurpose. The design should be flexible and adaptable to possible future uses different than the current to the extent practical while still meeting the operational and functional requirements defined within. Flexibility is achieved through design of more flexible structural load-bearing wall and column system arrangements. The site infrastructure will have at least a 50-year life expectancy with industry-accepted maintenance and repair cycles. Develop the project site for efficiency and to convey a sense of unity or connectivity with the adjacent buildings and with the Installation as a whole.

1.0.3 Requirements stated in this contract are minimums. Innovative, creative, and life cycle cost effective solutions, which meet or exceed these requirements are encouraged. Further, the OFFEROR is encouraged to seek solutions that will expedite construction (panelization, pre-engineered, etc.) and shorten the schedule. **The intent of the Government is to emphasize the placement of funds into functional/operational requirements. Materials and methods should reflect this by choosing the most economical Type of Construction allowed by code for this occupancy/project allowing the funding to be reflected in the quality of interior/exterior finishes and systems selected.**

## 1.1. SECTION ORGANIZATION

This Section is organized under 6 major "paragraphs".

- (1) Paragraph 1 is intended to define the project objectives and to provide a comparison between the military facility(ies) and comparable "civilian" type buildings.
- (2) Paragraph 2 describes the scope of the project.
- (3) Paragraph 3 provides the functional, operational and facility specific design criteria for the specific facility type(s) included in this contract or task order.
- (4) Paragraph 4 lists applicable industry and government design criteria, generally applicable to all facility types, unless otherwise indicated in the Section. It is not intended to be all-inclusive. Other industry and government standards may also be used, where necessary to produce professional designs, unless they conflict with those listed.
- (5) Paragraph 5 contains Army Standard Design Criteria, generally applicable to all facility types, unless otherwise indicated in the Section.

(6) Paragraph 6 contains installation and project specific criteria supplementing the other 5 paragraphs.

## **2.0 SCOPE**

### **2.1. ARMY FIRE STATIONS (AFS)**

Provide a standard Structural Fire Station to support military firefighters' mission to provide fire protection to installation flightlines and facilities, and fire prevention education and training.

Station size: Headquarters

Number of building stories: 1

Number of Companies: 2

Emergency Medical Services (EMS): No

Number and type of emergency vehicles to be accommodated: 13

Entrance shelter: Vestibule

Provide heating in Apparatus Bays.

## 2.2. SITE:

Provide all site improvements necessary to support the new building facilities. Refer to Paragraph 6.

Approximate area available 9.60 acres

## 2.3. GOVERNMENT-FURNISHED GOVERNMENT-INSTALLED EQUIPMENT (GFGI)

Coordinate with Government on GFGI item requirements and provide suitable structural support, brackets for projectors/VCRs/TVs, all utility connections and space with required clearances for all GFGI items. Fire extinguishers are GF/GI personal property, while fire extinguisher brackets and cabinets are Contractor furnished and installed CF/CI. All Computers and related hardware, copiers, faxes, printers, video projectors, VCRs and TVs are GFGI.

The following are also GFGI items: [Not Supplied - FacilityAddREq : GFGI\_ITEMS]

## 2.4. FURNITURE REQUIREMENTS

Provide furniture design for all spaces listed in Chapter 3 and including any existing furniture and equipment to be re-used. Coordinate with the user to define requirements for furniture systems, movable furniture, storage systems, equipment, any existing items to be reused, etc. Early coordination of furniture design is required for a complete and usable facility.

The procurement and installation of furniture is NOT included in this contract. Furniture will be provided and installed under a separate furniture vendor/installer contract. The general contractor shall accommodate that effort with allowance for entry of the furniture vendor/installer onto this project site at the appropriate time to permit completion of the furniture installation for a complete and usable facility to coincide with the Beneficial Occupancy Date (BOD) of this project. The furniture vendor/installer contract will include all electrical pre-wiring and the whips for final connection to the building electrical systems however; the general contractor shall make the final connections to the building electrical systems under this contract. Furthermore, the general contractor shall provide all Information/Technology (IT) wiring (i.e. LAN, phone, etc.) up to and including the face plate of all freestanding and/or systems furniture desk tops as applicable, the services to install the cable and face plates in the furniture, the coordination with the furniture vendor/installer to accomplish the installation at the appropriate time, and all the final IT connections to the building systems under this contract.

The Government reserves the right to change the method for procurement of and installation of furniture to Contractor Furnished/Contractor Installed (CF/CI). CF/CI furniture will require competitive open market procurement by the Contractor using the Furniture, Fixtures and Equipment (FF&E) package. Reference applicable appendix for Preliminary FF&E Information including furniture dimensions sizes as shown in the Standard Design.

## 2.5. NOT USED

### **3.0 FIRE STATION**

#### **3.1. FUNCTIONAL/OPERATIONAL REQUIREMENTS**

The Fire Station is composed of three main types of functional areas: Apparatus Equipment & Maintenance (the high bay area where the apparatus are stored and support areas), the Living area (the area where the firemen sleep, shower, eat and relax) and the Administrative & Training Area (the area where the offices and training are located along with the only area accessible by the public. Comply with the attached Army Standard for Fire Stations and Army Standard Designs for Fire Stations (Draft) for area and room functional requirements. Generally, the size of the station depends on the class of station, the number of companies housed, the number and types of emergency vehicles housed, and any additional spaces required. The class of station will partially determine the number of spaces required. However, depending on what is currently available on the Installation, some spaces normally reserved for Headquarters stations may be provided in Satellite stations.

##### **3.1.1. Accessibility Requirements**

The Administrative & Training Area in the building is the only area required to be accessible.

##### **3.1.1.1. Site Plan Design and Construction:**

- (a) Provide ABA compliance access from the parking lot to the building.
- (b) Provide two ABA compliant vehicle parking stalls for the fire station for visitor parking.
- (c) Provide vehicle parking signage and pavement markings.
- (d) Facility Design and Construction:
- (e) The main building entrance on the ground level and at least one emergency egress, designed per applicable code, shall be accessible. Electronic exterior door push buttons are not required.
- (f) Provide ABA clearances and door accesses in the main entrance lobby and the entire Administrative & Training areas of the Fire Station Facility.
- (g) Provide a accessible drinking fountain in the lobby.
- (h) Provide accessible public toilet(s), which may be unisex, in the lobby area.
- (i) Do not include provisions outlined within the ABA requirements for the vision or hearing impaired.

##### **3.1.2. CORE AREAS.** Arrange core areas in one or two story configurations as indicated in Paragraph 2 of this Section..

**3.1.2.1. Apparatus Bay Ancillary Functions.** These areas provide support for and are directly related to functions in the Apparatus Bay. These areas should be directly accessible to or a part of the Apparatus Bay.

**3.1.2.2. Telecommunications Room.** This area provides telecommunication support to the entire fire station facility, requiring direct access from the Administrative & Training Area.

**3.1.2.3. Recycle Area.** Provide a space for the collection and storage of recyclables in the fire station facility.

#### **3.2. BETTERMENTS**

**3.2.1.** Provide a floor radiant heating element at each vehicle bay door in colder climates to prevent the door from freezing to the pavement.

- 3.2.2. Provide ceiling fans in the Fitness Room.
- 3.2.3. If natural gas is available, provide a gas connection to an external grill.
- 3.2.4. Clear spans are preferred for the Apparatus Bay.
- 3.2.5. Provide closed circuit television (CCTV) to monitor entry/exit doors.
- 3.2.6. Provide an Intrusion Detection System (IDS) to protect equipment and assets.

### 3.3. SITE PLANNING AND DESIGN

Organize the site to be compatible with the site planning and style of adjacent existing structures. Locate the building to reflect local climatic conditions. For example, provide protection from prevailing winds and glare and orient operable windows to take advantage of summer breezes. Locate the building to take advantage of passive solar heating and day lighting.

3.3.1. Signage. All Army Fire Stations must have a sign placed at the front of the facility which clearly serves as a landmark for the facility. The sign should be placed at eye level. Provide standardized signage systems in compliance with the Area Design Guide to facilitate movement and provide a sense of orientation.

3.3.2. Vehicle Parking/Hardstand. Hardstand areas shall be rigid pavement. Pavement for organizational vehicle areas shall be designed for the heaviest vehicle at the installation.

3.3.3. Oil/Water Separator. Oil/water separators shall be designed in accordance with local codes and standard industry practice for the specific waste stream to be treated. Minimize maintenance requirements and locate oil/water separators to minimize pipe runs, provide vehicular access, and be out of circulation areas.

3.3.4. Parking and Other Access Drives: Access drives to staff and public parking shall not cross the vehicle access drive out of the Apparatus Bay. Locate parking areas so they do not dominate the main entrance and public image of the facility. Comply with UFC 4-010-01 DOD Minimum Antiterrorism Standards for Buildings.

### 3.4. ARCHITECTURE

3.4.1. Architectural Planning. The architectural plan shall accommodate the functional and spatial relationships required for a functionally efficient Fire Station. Building layouts shall recognize the contrasting operational, administrative and residential functional requirements, and the facility shall be designed for the appropriate accomplishment of each function.

3.4.2. Circulation Design Considerations. The interior functional arrangement shall allow for ease of circulation and movement and consider the safety, health and operational efficiency of the occupants. Also, the need for the fire fighters' rapid response to emergency situations shall be recognized. Exterior circulation at the facility shall meet antiterrorism and security requirements and provide safe and efficient vehicular movement.

3.4.3. Building Exterior. Consult the applicable Area Design Guide for the required aesthetic motif and material preferences. Select exterior materials to be attractive, economical, durable and low maintenance. Pre-engineered metal building systems are preferred for their factory finished metal siding and roof panels. Masonry walls are preferred at the ground floor level.

3.4.3.1. The Fire Station shall present a cohesive architectural image and shall comply with Command and Area Design Guide architectural standards. Also, consider the local geographical and cultural environment. Use durable and low-maintenance exterior finishes.

3.4.3.2. Ensure that the main Fire Station entrance is clearly identifiable to discourage visitors from entering the facility through an open Apparatus Bay door. In cold climates, provide a canopy (or a recess) at required egress doors to ensure that doors can completely open without obstruction from snow and ice. Comply with NFPA 80.

#### 3.4.4. Building Interior

3.4.4.1. Construction and finishes (walls, floor, and ceiling) shall support the cohesive image and theme of the facility. A residential, non-institutional character shall be reflected in the living areas of the facility, such as the Day Room and the Dorm Rooms.

3.4.4.2. Durability is extremely important when specifying materials for interior construction and finishes. Fire Stations are occupied 24 hours per day, seven days a week and heavy equipment is regularly handled throughout the facility. Compared to many other facility types, these conditions will lead to greater interior damage being incurred.

(a) Casework: Provide counters, casework, and cabinets of high-quality and durable construction with Premium or Custom finishes per AWI Quality Standards, 8<sup>th</sup> Edition. Casework, cabinet doors, and drawer faces shall be veneer panel core. At a minimum use plastic laminate doors, drawers, and casework faces. Where no water source is present, countertops shall have plastic laminate as a minimum. Where a water source is present, countertops shall be solid surface/solid composite plastics only.

(i) Interior Finishes: Finishes must take into account the intended uses, be highly durable, and meet the requirements listed in NFPA 101 Life Safety Code.

3.4.5. Floors. Provide concrete floors in the Apparatus Bay areas that shall be sloped to the floor trench drains. Provide floor trench drains parallel to the centerline of each vehicle or a continuous trench drain located at the interior side of overhead doors on each side of the Apparatus Bay. Slope trench drain toward the areas where component washing will occur.

3.4.6. Natural Lighting. The preference is for clerestory lighting over the Apparatus Bay area doors, and vision panels in overhead doors. Provide operable windows for natural lighting and ventilation in Administrative & Training Areas, Dorm Rooms, and Day Room/Training Room.

3.4.7. Apparatus Bay Doors. Provide overhead doors (minimum 14 feet wide by 14 feet high) in the exterior wall at each end of each structural bay and (minimum 18 feet wide by 18 feet high) in the exterior wall at each end of each ARFF bay.. Provide overhead doors (minimum 10 foot by 10 foot) for Consolidated Bench repair shop.

(a) Locking. Provide overhead doors that are operable from the interior only. Provide doors with a positive locking mechanism that will allow the door to remain open at engine exhaust position, approximately 1 ft above the floor. Coordinate door locking requirements with the using service.

(b) Serviceability. Design repair and Apparatus Bay doors to meet heavy duty loads and high frequency of operation. Conduct testing of deflection and operation of the doors prior to acceptance during construction. Doors shall be provided and installed by a commercial door company having not less than five years of experience in manufacturing, installing, and servicing the size and type of doors provided.

(c) Insulated Doors. The preference is insulated doors for thermal resistance and noise control.

3.4.8. Personnel Doors. Provide exterior personnel doors in the ends of central corridors maintenance areas, and in the circulation bays. Provide steel doors with vision panels, except at storage, janitorial, and latrine areas. Minimum size for personnel doors is 3 feet wide by 7 feet high.

#### 3.4.9. Special Acoustical Requirements

When a Fire Station is located near the flightline, comply with the AICUZ noise reductions for the facility location. If an AICUZ map is not available for the location, an acoustical engineer must conduct an acoustical analysis to determine the exact type and extent of the additional acoustical treatments needed to address aircraft noise.

#### 3.4.10. Finishes

##### 3.4.10.1. Paint

- (a) All paints used shall be listed on the "Approved product list" of the Master Painters Institute, (MPI). Application criteria shall be as recommended by Master Painters Institute (MPI) guide specifications for the substrate to be painted and the environmental conditions existing at the project site.
- (b) Exterior surfaces, except factory pre-finished material or exterior surfaces receiving other finishes shall be painted with a minimum of one prime coat and two finish coats. Paints having a lead content over 0.06 percent by weight of nonvolatile content are unacceptable. Paints containing zinc-chromate, strontium-chromate, mercury or mercury compounds, confirmed or suspected human carcinogens shall not be used on this project. Exterior paints and coating products shall be classified as containing low volatile organic compounds (VOCs) in accordance with MPI criteria. Application criteria shall be as recommended by MPI guide specifications. Provide an MPI Gloss Level 5 Finish (Semi-gloss), unless otherwise specified.
- (c) Interior surfaces, except factory pre-finished material or interior surfaces receiving other finishes shall be painted with a minimum of one prime coat and two finish coats. Paints having a lead content over 0.06 percent by weight of nonvolatile content are unacceptable. Paints containing zinc-chromate, strontium-chromate, mercury or mercury compounds, confirmed or suspected human carcinogens shall not be used on this project. Interior paints and coating products shall contain a maximum level of 150 g/l (grams per liter) of volatile organic compounds (VOCs) for non-flat coatings and 50 g/l of VOCs for flat coatings. Provide an MPI Gloss Level 5 Finish (Semi-gloss) in wet areas and a flat finish in all other areas.

##### 3.4.10.2. Minimum Interior Finishes

- (a) Designers are not limited to finishes listed in the following table MINIMUM INTERIOR FINISHES and are encouraged to offer higher quality finishes.
- (b) Wall, ceiling finishes, floor finishes and movable partitions shall conform to the requirements of the IBC, NFPA and UFC 3-600-01. Where code requirements conflict, the most stringent code requirement shall apply.
- (c) Resilient and tile flooring shall be used for floor finishes. If selected, vinyl composition tile (VCT) shall be a minimum 1/8 inch thick, conforming to ASTM F 1066, Class 2, through-pattern tile, Composition 1, asbestos free, with color and pattern uniformly distributed throughout the thickness of the tile.
- (d) Flooring shall conform to the Army Standard for Fire Stations and the Army Standard Design for Fire Stations (Draft).
- (e) Walls: All wall finish shall be painted gypsum board, except where stated otherwise. Use impact resistant gypsum board in corridors and the centralized laundry, if provided.
- (f) All ceiling finishes shall be painted gypsum board, except where stated otherwise.

#### 3.5. STRUCTURAL REQUIREMENTS



Design and construct as a complete system in accordance with APPLICABLE CRITERIA.

### 3.6. MECHANICAL REQUIREMENTS

#### 3.6.1. Fire Protection

Provide automatic sprinklers that provide 100 percent coverage of the facility. Avoid locating any sprinkler piping in spaces that may be subject to freezing. Portions of the sprinkler system subject to freezing may be d sprinkler systems. For the kitchen area(s), provide a wet chemical or water spray for all kitchen hood ductwork. Also, provide each cooking surface with a fire extinguishing system. Ensure the kitchen area(s) are in compliance with NFPA 96.

#### 3.6.2. Plumbing

Provide facility with a fully functional plumbing system that complies with the International Plumbing Code (IPC).

3.6.2.1. Drains: Provide floor trench drains parallel to the centerline of each vehicle or a continuous floor trench drain located at the interior side of overhead doors on each side of the Apparatus Bay. All vehicle bay drains shall connect to an approved oil/water separator with holding tank prior to discharge.

3.6.2.2. Connect all Equipment Wash/ Disinfection and Work Room/ Equipment Maintenance drains to an oil/water separator with holding tank.

3.6.2.3. Connect all Protective Clothing Laundry drains to an oil/water separator with holding tank, if required by location, in accordance with NFPA 1581 Standard on Fire Department Infection Control Program

3.6.2.4. Compressed Air: Provide a compressed air system in the Apparatus Bay with self-retracting lines at each vehicle bay and a separate compressed air system for the Self-Contained Breathing Apparatus (SCBA) Maintenance Room.

3.6.2.5. Hose Bibs: Provide hose bibs near Apparatus Bays for vehicle cleaning and maintenance and at the Patio.

3.6.2.6. Provide an emergency eye wash fountain and shower in the Apparatus Bay and Fire Extinguisher Inspection Room.

3.6.2.7. Provide a foot-operated mop sink with mop hanging rack in the Apparatus Bay.

#### 3.6.3. Heating, Ventilating and Air-Conditioning (HVAC)

Provide facility with a fully functional HVAC system that is automatically controlled by a Building Automation System (BAS).

3.6.3.1. Vehicle Exhaust System: A complete Apparatus Bay Air Cleaning System in compliance with NFPA 1500 Standard on Fire Department Occupational Safety and Health Program to eliminate 100% of vehicle exhaust emissions shall be utilized, consisting of exhaust filtration for apparatus and for off-gassing from Personal Protective Equipment. A hose based, or Fire Apparatus Vehicle Exhaust Removal System (FAVERS) system, may be used in conjunction with the filtration system.

3.6.3.2. SCBA Maintenance Room: Provide positive pressure ventilation in the Self-Contained Breathing Apparatus (SCBA) Maintenance Room to prevent contamination. Provide compressed air lines to the SCBA Maintenance Room.

3.6.3.3. The PPE Gear Storage Room, if provided, shall be negatively pressurized with dedicated exhaust vented to the outside to evacuate gaseous emissions from stored gear or filtration equipment that is designed to filter and remove gaseous emissions from Personal Protective Equipment shall be provided.

3.6.3.4. Dorm Room Pressurization: Positively pressurize the Dorm Rooms with a 100% dedicated outdoor air unit. Dedicated outdoor air units shall continuously supply dehumidified, tempered air to each Dorm Room. Provide compliance with International Mechanical Code (IMC) chapter 4 and maintain slight building positive pressurization. Dedicated outdoor air unit cooling/dehumidification shall be available 24 hours a day/7 days a week/365 days a year. Refer to Paragraph 6 of this section for site specific constraints. Use the outdoor air unit to ventilate and pressurize corridors adjacent to the Dorm Rooms.

3.6.3.5. Dorm Room Temperature Control: Provide each Dorm Room with an individual heating/cooling unit. Centrally control each unit with the facility's Direct Digital Control (DDC) system. Occupant control shall include fan selection (on/off) and a slide bar temperature set point adjustment that allows +/- 2 degrees F of adjustment from the DDC programmed set points (70 degrees F heating, 75 degrees F cooling). Additionally, the DDC controls shall monitor each dwelling unit for sub-cooling. The DDC system shall record an alarm event if the space temperature drops below 71 degrees F (adjustable) when the outside air is greater than 85 degrees F (adjustable).

### 3.7. ELECTRICAL REQUIREMENTS

Electrical power, lighting and telecommunications shall be provided to the facility as specified below, in accordance with APPLICABLE CRITERIA, GENERAL TECHNICAL REQUIREMENTS, all IEEE Standards (including Recommended Practice) where the scope is applicable to this design effort, all UL Standards where the UL scope is applicable to this design effort and where itemized, in the combined interdisciplinary areas cited. Dorm Rooms shall be considered to be living and sleeping rooms; therefore they are considered part of a dwelling unit per NFPA 70 definition.

- (a) Perform a short circuit study as an integral part of selecting and sizing electrical distribution components (all equipment shall be fully rated; that is, do not use series-combination rated equipment).
- (b) Perform a coordination study to ensure that protective device settings are appropriate for the expected range of conditions (depending on the design and construction schedule, it is acceptable to design adequate protective devices with adjustable features, followed by a coordination study required during construction to specify the correct settings.)
- (c) Circuit breakers, disconnect switches, and other devices that meet the OSHA definition of energy-isolating device shall be lockable.
- (d) Do not exceed 5 percent combined voltage drop on feeders and branch circuits if the transformer providing service is located within the facility. If the transformer is located exterior to the facility, limit the combined voltage drop for service conductors, feeders, and branch circuits to 5 percent. Individual voltage drop on branch circuits should not exceed 3 percent. Branch circuits supplying sensitive circuits should be limited to 1 percent voltage drop.
- (e) Unless unavoidable, to minimize sound transmission, do not install "back-to-back" outlet boxes

#### 3.7.1. Exterior Lighting

##### 3.7.1.1. Site Lighting

Provide general site lighting to ensure that parking areas and the exterior facility, including facility aprons, open storage areas, walkways, etc., have adequate lighting for safety, evacuation, and security measures. Exterior area lighting systems should consist of color corrected high intensity discharge lighting units mounted on poles and located within the clear zone and on the primary facility. Illumination levels shall be 50 lux for areas adjacent to the primary facility and 5 lux for parking areas.

3.7.1.2. Perimeter Security Lighting. Protective lighting systems shall be provided in response to project specific requirements to deter trespassers and make them visible to guards. Levels of exterior lighting for protected areas shall conform to the requirements in the IES Lighting Handbook. Lighting circuits shall be controlled by a photoelectric cell with manual override. If the facility is near a flight line, site lighting cannot interfere with or be a distraction to aircraft operations or movement at night.

3.7.1.3. Lighting Controls. Perimeter security lighting protective lighting circuits shall be provided with photocell control with a manual "ON/OFF/AUTO" control switch independent of the control device for the ASHRAE 90.1 nonexempt lighting. The facility aprons and open storage area lighting circuits shall be provided with photocell control with a manual "ON/OFF/AUTO" control switch independent of the control device for the ASHRAE 90.1 nonexempt lighting.

### 3.7.2. Interior Lighting

Provide fluorescent luminaires with premium efficiency electronic programmed start fluorescent ballasts. For spaces where the "Standard Design Criteria, Fire Stations, Room By Room Descriptions" of a space does not specify a particular light level target, the illumination shall be in accordance with the recommendations of the IESNA and other applicable criteria and standards.

3.7.2.1. Illumination target level is 50 foot-candles for the PPE Gear Storage Area, Protective Clothing Laundry, Equipment Maintenance/Wash/Disinfection Area, Fire Extinguisher Inspection, Maintenance and Storage Area (also provide task lighting at work/service bench), Dispatch Area (also provide task lighting at the desk), Day/Training Room (including kitchen), Apparatus Bay and Hose Storage Area. Apparatus Bay lighting design shall incorporate the design elements per UFC 3-530-01 for a Maintenance Facility Vehicle Storage/Repair Area. The illumination is the same for the following rooms if they are included in the project facility: SCBA Maintenance/Compressor room, EMT Storage and Medical Storage Cabinet, Fire Chief's and Deputy Fire Chief's Offices (also provide task lighting at the desk), and Computer Training/Testing Room.

3.7.2.2. Illumination target level is 50 foot-candles for the HAZMAT/CBRNE Equipment Storage Areas, Agent Storage Area, Spare PPE Gear Storage Area, Vehicle Maintenance Equipment Storage Area, Deployment Gear Storage area, and Vending Area.

3.7.2.3. Illumination target level is 0.5 foot-candles for the Outdoor Patio/BBQ Area.

3.7.2.4. Illumination target level of rooms not specified shall be to current codes. Upon conflict current codes shall dictate illumination target levels.

3.7.2.5. Provide dimming controls for the lighting in the Day/Training Room (including kitchen) and Recreation Room.

3.7.2.6. Provide under-cabinet counter lighting where wall cabinets are used above counter tops.

### 3.7.3. Interior Power

3.7.3.1. When facility electrical design includes a 480/277V power distribution system, mechanical systems and lighting systems shall generally be fed from the available 480/277V power distribution system.

3.7.3.2. In general, provide wall duplex outlets, not less than 10 feet on center. Provide not less than one duplex outlet per wall on walls less than 10 feet long. Locate outlets to eliminate the need for extension cords.

3.7.3.3. Above counter receptacles shall be mounted in the vertical wall space above the counter-top.

3.7.3.4. Data, CATV, and similar electronic equipment outlets shall each be provided with an associated duplex receptacle.

3.7.3.5. Provide GFCI outlets in the Apparatus Bays, restrooms, kitchen and water accessible work areas. Provide weatherproof GFCI outlets for all exterior outlets.

#### 3.7.4. Emergency Power

Provide an Emergency Power Supply System (EPSS) in accordance with NFPA 110 for Class X (minimum time 72 hours), Level 1, Type 10. Provide Bypass-Isolation Switches to bypass and isolate the transfer switch. On-site fuel supply shall be provided. Prime movers shall not be solely dependent on a public gas utility for their fuel supply. Means shall be provided for automatically transferring from one fuel supply to another where dual fuel supplies are used. Provide 100% emergency generator back-up power for all Fire Stations.

#### 3.7.5. Special Power Requirements

(a) Apparatus Bay: Provide Apparatus Bay doors with a signaling system to indicate fully raised doors with a red/green indicator located on the driver's side at 6 feet above finished floor. Locate all outlets at 36 inches above finished floor. Provide self-retracting electric drop cords between vehicles that can reach to either end of the bay.

(b) Vehicle Maintenance Bay: Provide vehicle maintenance bay doors with a signaling system to indicate fully raised doors with a red/green indicator located on the driver's side at 6 feet above finished floor. Locate all outlets at 36 inches above finished floor. Provide self-retracting electric drop cords between vehicles that can reach to either end of the bay.

(c) Hose Storage: Provide dedicated outlets to support drying equipment.

(d) Station Officer's Office/Watch Desk: Provide outlets as needed to support the extensive equipment required. Provide two additional quad outlets at the control center console. Provide a switch controlling operation of Apparatus Bay doors.

(e) Telecommunications Room: Provide outlets as needed to support the extensive equipment required. In addition, provide two spare quad outlets. In addition to providing generator backup power for the computer file server and for all dispatch and alarm systems, provide uninterrupted power supply (UPS) that will provide uninterrupted flow of power to gap between the time of power loss and the time that the generator is providing power. Provide transient voltage surge suppression in the electric panel(s) serving this room. Provide a Stored Energy Power Supply System (SEPSS) UPS in accordance with NFPA 111 for Type O, Class 0.25, Category B, Level 1.

(f) Kitchen: Provide dedicated outlets to accommodate all non-portable kitchen equipment.

(g) Fitness Room: Provide dedicated wall or floor outlets as needed to accommodate fitness machines such as treadmills, bikes and stair-step machines. Provide dedicated circuit to accommodate the sauna's heating element.

(h) Laundry Room: Provide additional outlet at the folding table.

(i) Recreation Room: Provide additional outlets(s) to accommodate game equipment. Refer to Paragraph 6.0 of this Section for the number of game equipment to be provided.

(j) Vending Area: Provide dedicated power and outlets required by vending machines. Refer to Paragraph 6.0 of this Section for the number of vending machines to be provided.

(k) Department Training Room: Provide direct power to each work table.

(l) Computer Training/Testing Room: Provide direct power to each computer/study corral and for other equipment such as printers.

(m) Dispatch and Station Officer's Office/Watch Desk: Provide UPS for all dispatch room systems. The UPS shall provide an uninterrupted flow of power to gap between the time of power loss and the time

that generator is providing power. Provide outlets as needed to support all equipment, including charging equipment for handhelds. Provide switch controlling "open only" operation of Apparatus Bay doors. Provide simultaneous light and audible control for the following elements when the firefighter alert system is activated: Dorm Room lights (the dedicated alert light), corridor lights from Dorm Rooms to Apparatus Bay and the Apparatus Bay lights. Provide a Stored Energy Power Supply System (SEPSS) UPS in accordance with NFPA 111 for Type O, Class 0.25, Category B, Level 1.

(n) Outdoor Patio/BBQ: Provide minimum of four weatherproof GFCI outlets (with additional outlets provided as needed to support functional requirements).

(o) Dorm Rooms: Provide a minimum of two duplex outlets at the night table location so that each of the two firefighters who share the room will be capable of plugging in two personal use items at the night table location.

### 3.7.6. Mass Notification

Provide the Mass Notification System (MNS) combined with the Fire Alarm System to prevent duplication of devices and maintenance, which should interface with the installation MNS to provide emergency notifications of an area, regional or national nature. Designer should also consider combining with the Public Address System (PA) for further cost savings.

### 3.7.7. Firefighter Alert System

Firefighter Alert System shall provide visual/audible alerts, features, and controls. Provide simultaneous light and audible control for the following spaces when the firefighter alert system is activated: Dorm Room lights (the dedicated alert light), corridor lights from Dorm Rooms to the Apparatus Bay, and the Apparatus Bay lights. Provide controls for the system at the Station Officer's Office/Watch Desk and at Dispatch Desk. Provide the Fire Chief's and Deputy Fire Chief's Offices with a dedicated alert light fixture that is controllable from the Watch Desk/Dispatch and is tied into the firefighting alert system with a red-tinted bulb or lens.

### 3.7.8. Hazardous Locations

Hazardous locations shall be clearly defined by the designer based on the intended use of the facility and applicable criteria. Receptacles, devices, equipment and wiring in hazardous locations shall be designed (UL listed for the application) and installed in accordance with the NFPA codes. When hazardous locations are determined to be up to 18-inches above the finished floor, receptacles, devices and conduit routing to them shall be installed above the hazardous area or at the height required by the Paragraph 3.7.6.1 Special Power Requirements, whichever is higher.

#### 3.7.8.1. Grounding

The building shall have a ground grid around the perimeter for grounding incoming service, building steel, lightning protection, telephone service, piping, and internal grounding requirements. Provide ground straps as required above and connect to the building grounding system. Provide grounding points in vehicle and equipment parking areas on 40 foot centers (maximum), and coordinate with the power and data bollard units. Additional grounding may be provided based on project requirements.

#### 3.7.8.2. Cathodic Protection System

Corrosion protection for the facility shall be provided by coordinated material specification and/or provision of a cathodic protection system to assure corrosion will not compromise system operation for the 50-year infrastructure design lifetime of the facility. Provide an appropriate cathodic protection system when the design analysis of a corrosion engineer indicates cathodic protection is recommended to assure corrosion will not compromise system operation for the 50-year infrastructure design lifetime of the facility.

### 3.8. TELECOMMUNICATIONS REQUIREMENTS

Telecommunications design shall be in accordance with the Technical Guide for Installation Information Infrastructure Architecture (I3A). In the I3A Technical Criteria, the word "shall" shall be substituted for the word "should" throughout the document.

#### 3.8.1. Service

Coordinate service with local Network Enterprise Center (NEC) personnel.

#### 3.8.2. System

Provide a fully operational system from the demarcation point to each outlet.

Coordinate any closed-circuit television (CCTV)/camera systems with the appropriate Installation security office.

#### 3.8.3. Cable TV (CATV) Requirements

All CATV outlet boxes, connectors, cabling, and cabinets shall conform to the I3A Technical Criteria unless noted otherwise. All horizontal cabling shall be ran from the CATV outlet to the nearest telecommunications room. Provide outlets in Day Rooms, Recreation Rooms and Training areas, and any room specified in the Army Standard Design for Fire Stations (Draft). Provide provisions for programming input to specific outlets from sources in the Telecommunications Room.

#### 3.8.4. Fire Alarm Requirements

There shall be one complete addressable Fire Alarm System for each building. Combine system with MNS and consider incorporating PA system to reduce device and maintenance costs. This system shall consist of a control panel, a communications device, initiating devices, notification devices and associated wiring and pathways. Class A addressable systems shall be installed.

3.8.4.1. All smoke detectors and carbon monoxide detectors shall be monitored. Tampering with a smoke and carbon monoxide detectors shall send a trouble signal to the control panel.

3.8.4.2. All software, software locks, special tools and any other proprietary equipment required to maintain, add devices to or delete devices from the system, or test the Fire Alarm system shall become the property of the Government and be furnished to the Contracting Officers Representative prior to the final inspection of the system.

### 3.9. ATTACHMENTS A THROUGH C

The Attachments represent the Army Standards at the time of award. The Standards may be updated through the course of the contract. Attachment C – The Army Standard Design for Fire Station – Plans are for information only to show general layout and arrangement of the facility. Provide the facility for this project as depicted in the floor plan provided in Appendix J.

Attachment A – The Army Standard for Fire Stations

Attachment B – Standard Design Criteria Fire Stations – Room by Room Description

Attachment C – The Army Standard Design for Fire Station - Plans

Fire Station Space Program Data  
Site Plan  
Floor Plan



DEPARTMENT OF THE ARMY  
ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT  
600 ARMY PENTAGON  
WASHINGTON, DC 20310-0600

DAIM-ZA

APR 9 2010

## MEMORANDUM FOR

Commander, US Army Corps of Engineers (CEMP), 441 G Street NW,  
Washington, DC 20314  
Installation Management Command (IMCOM), 2511 Jefferson-Davis Highway,  
Arlington, VA 22202-3926

SUBJECT: Army Standard for Fire Stations

1. The Army Standard for Fire Stations (encl) is hereby approved for implementation.
2. These standards apply to all Army Components. Only the Assistant Chief of Staff for Installation Management has the authority to approve exceptions to this standard. Waivers from the Army Standard must be approved in accordance with AR 420-1.
3. These standards are mandatory for Military Construction, Army projects in FY13 and beyond and, where feasible, will be incorporated into FY12 projects. Designs based on these Army Standards, Standard Designs, and Design Criteria will be developed consistent with Military Construction transformation methodologies.
4. The chair for the Facilities Design Team (FDT) is Mr. Bill E. Sproul, PE, DAIM-ODC, [William.Sproul1@us.army.mil](mailto:William.Sproul1@us.army.mil), (703) 604-1454. The FDT POC at the USACE Center of Standardization for Fire Stations is Mr. Juan Pace, CEHNC-ED-CS-A, [Juan.R.Pace@usace.army.mil](mailto:Juan.R.Pace@usace.army.mil), (256) 895-1675.

Encl

A handwritten signature in blue ink, appearing to read "Rick Lynch", is positioned above the typed name.

RICK LYNCH  
Lieutenant General, GS  
Assistant Chief of Staff  
for Installation Management



**DEPARTMENT OF THE ARMY**  
**ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT**  
**600 ARMY PENTAGON**  
**WASHINGTON DC 20310-0600**

**The Army Standard for Fire Stations**

**March 2010**

**Description:** The standard Army Fire Station is an emergency respondent facility which supports the needs of military, civilians, soldiers and families during fire and medical emergency situations. The Fire Station is comprised of three main essential elements: **Apparatus Equipment & Maintenance, Administrative & Training, and Living areas.**

**Applicability:**

- The Army Standard applies to Active, Reserve, and National Guard Component facilities on Army Garrisons.
- All United States Army Corps of Engineers (USACE) geographic districts shall incorporate the key mandatory design features described herein in close coordination with USACE Center of Standardization (CoS) for Fire Station facilities.
- The criterion covers all MCA funded Army Fire Station Facilities. The functional relationships are mandatory unless variations are approved by the CoS. The size of the Army Fire Stations shall be based on the mission of the installation. The staff size shall depend on the number of companies in the facility and whether the facility is a Satellite or a Headquarters facility. All projects must be reviewed by the CoS to ensure conformance with the Army Standard.

**Waivers:**

- Only the Assistant Chief of Staff for Installation Management has authority to approve exceptions to the Army Standard.
- Waivers from the Army Standard must be requested in accordance with Army Regulation (AR) 420-1 and the Army Facilities Standardization Program Charter, latest edition.
- All requests for a waiver to the Army Standard require CoS conflict resolution prior to submission by the Garrison Commander.
- Garrison Army Standard waiver request submissions must be received in sufficient time to allow the completion of the Facility Design Team review and development of recommendations or courses of action for the Army Facilities Standardization Committee to consider prior to implementation into project design.
- All waiver requests shall include compelling rationale of functional and operational deviations to include substantiating documentation in sufficient detail for the Army to assess implications of approving the waiver.



## The Army Standard for Fire Stations, March 2010

- All Headquarters, Department of the Army (HQDA) approved waivers shall be documented in installation master plans thereby serving as the installation's modified standards for the facility type affected.
- Late submissions and/or project delays are NOT sufficient stand-alone justification for accelerated review or other dispensation to meeting the Army Standard contained herein.

The Guidance section provides instructions and definitions necessary for the application of the mandatory requirements contained in the tabular section of the Army Standard. As such, they are used in conjunction with the Army Standard in order to ensure the intent and embedded functionality contained herein shall meet the Army's mandatory requirements set forth by this standard.

The Army Standard for Fire Stations is as follows and is based on Army Baseline Standards:

### **THE ARMY STANDARD FOR FIRE STATIONS**

ITEM	MANDATORY CRITERIA
<b>Facility Consolidation</b>	Fire Stations are intended to be stand-alone facilities except when combining a Fire Station with Military Police (MP), Safety, and Directorate of Emergency Services (DES) functions, which is called a DES Facility. An Army Standard has been developed for a DES Facility. No other facility types can be combined with the Fire Station.
<b>Energy and Sustainability</b>	Fire Stations shall be designed to meet energy and sustainable design and development requirements as established by Federal Law and Department of the Army policy.
<b>Planning and Design</b>	This Standard provides guidelines for evaluating, planning, programming, and designing Structural and Aircraft Rescue Fire Fighting (ARFF) Fire Stations. The information in this Standard applies to the design of all new construction projects, to include additions, alterations, and renovation projects in the continental United States (CONUS) and outside the continental US (OCONUS). Alteration and renovation projects shall update existing facilities to meet the guidance and criteria contained in this Standard within budgetary constraints.
<b>Accessibility</b>	The Administrative & Training Areas in the Fire Station are the only areas open to general public and are the only areas within the Fire Station that are required to be Architectural Barriers Act of 1968 (ABA) accessible and shall be in accordance with the latest edition of the Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines, as required by Architectural Barriers Act, title 42 United States Code, sections 4151 - 4157, (42 USC 4151-4157).
<b>Site Selection and Planning</b>	The most critical determinant for the location of a Fire Station is response time. In addition to response time, provide adequate site space to accommodate the fire fighting vehicular turning radii, personnel parking, visitor parking, delivery vehicles, storage requirements, and reserve

	vehicles (if applicable). Direct access and response time may conflict with tightening antiterrorism (AT) criteria - ensure that trucks shall not have to cross access control points to reach a target structure or flight line. Facility site shall be prominent and easily visible from the target areas (structures or flight lines).
<b>Vehicular Circulation/Service Road/Drives</b>	Provide site entrances, exits, service drives and any special circulation areas sized to accommodate the largest vehicle that uses the area. Drive through bays shall be utilized. Provide a service road/drive on the side of the building adjacent to the mechanical room. The service drive shall have a controlled access point.
<b>Staff/Visitor Parking</b>	Provide parking for authorized Fire Station staff. Parking area shall be sized to accommodate two shifts. Provide parking for Fire Station visitors. Visitor parking shall be separate from staff parking. Access drives to staff and public parking shall not cross the vehicle access drive out of the Apparatus Bay. Visitor parking spaces shall be approximately 25% of staff parking and shall contain the appropriate number of handicapped accessible spaces as determined by the Architectural Barriers Act of 1968.
<b>Exterior Lighting</b>	Exterior lighting systems shall be provided for parking areas, sidewalks, building entrances and perimeter for safety, evacuation and security measures. If the facility is near a flight line, site lighting shall not interfere with or be a distraction to aircraft movement at night.
<b>Response Time</b>	Refer to Department of Defense (DoD) Instruction 6055.06, <i>DoD Fire and Emergency Services Program</i> to determine required response times.
<b>Patio</b>	Provide outdoor patio space adjacent to the kitchen/dining area, residential in nature, and provide area for firefighters to prepare meals in an outdoor setting that promotes stress reduction and team building. A one or two company station shall have 150 SF and a 3-Company station shall have 250 SF.
<b>Canopy</b>	Provide overhead protection at fire station entrance and when required at egress doors at 40 SF. Canopy area shall be calculated using US Army Technical Instructions 800-01 (TI 800-01), Design Criteria.  As required by geographical location, this area may be required to be a vestibule at 80 SF per vestibule area.
<b>Emergency Generator</b>	Provide 100% emergency generator back-up power for Headquarters and Satellite stations for a 72-hour period.

**Primary Facility Scope and Capacity for Standard Structural Fire Station**

The facility sizes below are based on Standard Structural Fire Stations.

Gross Square Feet (GSF) Deviation: The facility constructed gross area shall not exceed 105% of the space allocation set forth in this document to accommodate site, construction, or environmental factors.

The number of Apparatus Bays and Dorm Rooms are used to determine the overall size of the Fire Station facility.

A Standard One Company Fire Station includes a two bay apparatus at 4,095 SF net. A Standard Two and Three Company Fire Station includes a three bay apparatus at 5,642 SF net.

Facility Size Classification	Facility Size (GSF)	Apparatus Bay	Number of Emergency Vehicles (See Note 1)	Dorm Rooms (See Note 2)	Staffing (Min.)
One Company Headquarters (HQs)	16,500	2	Up to 4	5	22
One Company Satellite	11,500	2	Up to 4	5	12
Two Company HQs	20,200	3	Up to 6	10	33
Two Company, Two Story HQs	24,600	3	Up to 6	10	33
Two Company Satellite	15,000	3	Up to 6	10	22
Three Company HQs	23,100	3	Up to 6	15	44
Three Company Two Story HQs	27,600	3	Up to 6	15	44
Three Company Satellite	17,500	3	Up to 6	15	32

**Notes:**

1) Total number of Apparatus Bays shall be determined by the authorized number of emergency vehicles based on the current Table of Distribution and Allowance (TDA). One additional bay is authorized for every additional one to two emergency vehicle(s).

2) When Emergency Medical Services (EMS) is authorized based on the current TDA, two (2) additional dorm rooms are authorized.

## The Army Standard for Fire Stations, March 2010

Primary Facility Scope and Capacity for Standard Aircraft Rescue Fire Fighting (ARFF) Fire Station	The facility sizes below are based on Standard ARFF Fire Stations.																																																						
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	A Standard One Company Fire Station includes a two bay apparatus at 4,550 SF net. A Standard Two and Three Company Fire Station includes a three bay apparatus at 6,370 SF net.																																																						
	<table><tr><th>Facility Size Classification</th><th>Facility Size (GSF)</th><th>Apparatus Bay</th><th>Number of Emergency Vehicle (See Note 1)</th><th>Dorm Rooms (See Note 2)</th><th>Staffing (Min.)</th></tr><tr><td>One Company HQs</td><td>17,100</td><td>2</td><td>Up to 4</td><td>5</td><td>22</td></tr><tr><td>One Company Satellite</td><td>12,100</td><td>2</td><td>Up to 4</td><td>5</td><td>12</td></tr><tr><td>Two Company HQs</td><td>21,100</td><td>3</td><td>Up to 6</td><td>10</td><td>33</td></tr><tr><td>Two Company, Two Story HQs</td><td>25,600</td><td>3</td><td>Up to 6</td><td>10</td><td>33</td></tr><tr><td>Two Company Satellite</td><td>15,800</td><td>3</td><td>Up to 6</td><td>10</td><td>22</td></tr><tr><td>Three Company HQs</td><td>24,000</td><td>3</td><td>Up to 6</td><td>15</td><td>44</td></tr><tr><td>Three Company Two Story HQs</td><td>28,500</td><td>3</td><td>Up to 6</td><td>15</td><td>44</td></tr><tr><td>Three Company Satellite</td><td>18,300</td><td>3</td><td>Up to 6</td><td>15</td><td>32</td></tr></table>	Facility Size Classification	Facility Size (GSF)	Apparatus Bay	Number of Emergency Vehicle (See Note 1)	Dorm Rooms (See Note 2)	Staffing (Min.)	One Company HQs	17,100	2	Up to 4	5	22	One Company Satellite	12,100	2	Up to 4	5	12	Two Company HQs	21,100	3	Up to 6	10	33	Two Company, Two Story HQs	25,600	3	Up to 6	10	33	Two Company Satellite	15,800	3	Up to 6	10	22	Three Company HQs	24,000	3	Up to 6	15	44	Three Company Two Story HQs	28,500	3	Up to 6	15	44	Three Company Satellite	18,300	3	Up to 6	15	32
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Layout and Adjacencies	The key internal adjacencies are driven by response time. The locations of the living areas shall accommodate a turn out response time of 60 seconds from the time of dispatch to the Apparatus Bay(s) in the event of an alarm.
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Fire Protection	Fire Station facilities shall be fully protected by automatic fire suppression.
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	fire detection, and building alarm systems.
<b>Electrical Design</b>	Provide site electrical utilities, interior distribution systems, communications, and security according to the latest codes and criteria.
<b>Firefighter Alert System</b>	Provide simultaneous light and audible control inside and outside to alert on duty staff of emergencies.
<b>Apparatus, Equipment &amp; Maintenance- (Room Features)</b>	
Apparatus Bay	<ol style="list-style-type: none"> <li>1. The Apparatus Bay(s) shall be properly sized to house authorized emergency vehicles as per the Fire Station's Table of Distribution and Allowance (TDA) for the installation. The size of Apparatus Bays are used to determine the overall area of the Fire Station facility.</li> <li>2. Bays shall be double length and shall be sized according to truck modules of two medium sized trucks. <ul style="list-style-type: none"> <li>▪ A Standard Structural Apparatus for a One-Company Fire Station shall be 45 ft. Wide X 91 ft. long (4,095 SF) net.</li> <li>▪ A Standard Aircraft Rescue Fire Fighting Apparatus for a One-Company Fire Station shall be 50 ft. Wide X 91 ft. long (4,550 SF) net.</li> <li>▪ A Standard Structural Apparatus for a Two and Three-Company Fire Station shall be 62 ft. Wide X 91 ft. long (5,642 SF) net.</li> <li>▪ A Standard Aircraft Rescue Fire Fighting Apparatus for a Two and Three-Company Fire Station shall be 70 ft. Wide X 91 ft. long (6,370 SF) net.</li> <li>▪ An additional Structural bay shall be 17 ft. Wide X 91 ft. Length (1,547 SF) net.</li> <li>▪ An additional Aircraft Rescue Fire Fighting bay shall be 20 ft. Wide X 91 ft. Length (1,820 SF) net.</li> </ul> </li> <li>3. Bays shall be sited to provide ready access for trucks to maneuver into traffic and any major thoroughfare.</li> <li>4. Drive through bays shall be utilized.</li> <li>5. Each bay shall include the following support utility drops for vehicles: air handling/air quality systems, overhead cold water fill, compressed air, cold water, floor trench drain(s), lighting, power, and oil/water separator.</li> <li>6. A complete Apparatus Bay Air Cleaning System shall be utilized consisting of exhaust filtration for apparatus and for off-gassing from Personal Protective Equipment. A hose based or Fire Apparatus Vehicle Exhaust Removal System (FAVERS) system may be used in conjunction with the filtration system.</li> <li>7. Maintain total volume Apparatus Bay air quality within established Regulatory Guidelines for Volatile Organics, Nitrogen Oxide, Sulfur Dioxide, Carbon Monoxide, Particulates, Diesel Exhaust Particulates established by: <ul style="list-style-type: none"> <li>▪ NIOSH- National Institute for Occupational Safety &amp; Health REL</li> </ul> </li> </ol>

## The Army Standard for Fire Stations, March 2010

	<p>(Recommended Exposure Limit/10 Hour Time Weighed Average)</p> <ul style="list-style-type: none"> <li>▪ OSHA- Occupational Safety &amp; Health Administration PELs (Permissible Exposure Limit/ 8 Hour Time Weighed Average)</li> <li>▪ ACGIH- American Conference of Governmental Industrial Hygienists: Threshold Limit Value (Average Over 8 Hour Work Shift)/ Short Term Exposure Limit (Over 15 Minute Period)</li> <li>▪ Latest NFPA 1500 - National Fire Protection Association Standard on Fire Department Occupational Safety and Health Program</li> </ul> <p>8. Provide an oil-water separator with holding tank for waste water from all Apparatus Bay drains.</p> <p>9. Bays shall be heated except in very temperate/tropical climates, but shall not be air conditioned.</p> <p>10. Provide an emergency eye wash fountain and shower, foot operated mop sink with mop hanging rack, and ice machine.</p>
<b>Apparatus, Equipment &amp; Maintenance (Room Features)- (Cont.)</b>	<p><b>The following are areas required to support the Apparatus Bay and shall be included in every Headquarters facility: Station Captain's Suite, Personal Protective Equipment (PPE) Gear Storage, Hose Storage, Self-Contained Breathing Apparatus (SCBA) Maintenance Room, Self-Contained Breathing Apparatus (SCBA) Compressor Room, Protective Clothing Laundry, Equipment Wash/Disinfection, Work Room/ Equipment Maintenance, Emergency Medical Services (EMS) Equipment Storage, Fire Extinguisher Inspection (Flight Line or Non-Flight Line) Maintenance and Storage or Clean-Up Room or PPE Gear Storage Room, and Hazardous Material/Chemical, Biological, Radiological, Nuclear, Explosive Equipment Storage and Spare Personal Protective Equipment Storage.</b></p> <p><b>The following are areas required to support the Apparatus Bay and shall be included in every Satellite facility: Personal Protective Equipment (PPE) Gear Storage, Hose Storage, Self-Contained Breathing Apparatus (SCBA) Maintenance Room, Self-Contained Breathing Apparatus (SCBA) Compressor Room, Protective Clothing Laundry, Equipment Wash/Disinfection, Work Room/ Equipment Maintenance, Emergency Medical Services (EMS) Equipment Storage, and Fire Extinguisher Inspection (Flight Line or Non-Flight Line) Maintenance and Storage or Clean-Up Room or PPE Gear Storage Room.</b></p>
Station Captain's Suite	<p>The Station Captain Office shall only be located in the Headquarters Fire Stations. This typical office space at 120 net square feet shall contain a workstation and private dorm room at 85 net square feet. The dorm room shall have direct access from the Station Captain's office and direct access to the Assistant Chief's Toilet. The Station Captain's office shall be accessible from the Apparatus Bay and an observation window shall be provided to the Apparatus Bay.</p>
Personal Protective Equipment (PPE) Gear	<p>Shall have a locker area to accommodate Personal Protective Equipment. The area shall have an air quality system to filter and remove gaseous</p>

## The Army Standard for Fire Stations, March 2010

Storage (Included in Apparatus Bay Area)	emissions from stored gear and is located along the side walls of the Apparatus Bay. The locker layout shall allow free air circulation around and throughout the clothing. Personal Protective Equipment Gear Storage is located along the side walls of the Apparatus Bay. As required by installation, this area can assigned in place of the Fire Extinguisher Inspection (Flight Line or Non-Flight Line) Maintenance and Storage and shall be accessible from the Apparatus Bay.
Hose Storage (Included in Apparatus Bay Area)	Shall have area for drying and storage of hoses. Hoses are rolled and stored on mobile storage racks and shall be accessible from Apparatus Bay. Hose storage racks are located along the side walls of the Apparatus Bay.
Self-Contained Breathing Apparatus (SCBA) Maintenance Room	Shall have area to service and maintain Self-Contained Breathing Apparatus at 144 net square feet. The room also contains a Mask Pressure Testing Machine. Shall provide area for open shelf storage units. This area shall be accessible from Apparatus Bay and shall have direct access to the Self-Contained Breathing Apparatus Compressor Room.
Self-Contained Breathing Apparatus (SCBA) Compressor Room	Shall have room to house compressor to support the Self-Contained Breathing Apparatus at 50 net square feet. Shall have adequate access to this area for the placement of compressor equipment. This space shall include sound attenuation. A compressed air supply line shall be provided from this room to the Apparatus Bay and Self-Contained Breathing Apparatus Maintenance Room. Shall have direct access from the Self-Contained Breathing Apparatus Maintenance Room.
Protective Clothing Laundry	Shall have laundry facility area to wash and disinfect firefighters' protective clothing. This area shall be accessible from the Apparatus Bay. <ul style="list-style-type: none"> <li>100 net square feet shall be provided for a One and Two-Company Fire Station.</li> <li>150 net square feet shall be provided for a Three-Company Fire Stations.</li> </ul>
Equipment Wash/ Disinfection	Shall have area to wash/disinfect and initiate any minor repair to firefighters' equipment at 150 net square feet. Shall provide area for a work table with adequate lighting and ample storage. Shall provide area for hanging racks and open shelf storage units. This area shall be adjacent to the Work Room/Equipment Maintenance and shall be accessible from the Apparatus Bay. Provide an oil-water separator with holding tank for waste water from all drains.
Work Room/ Equipment Maintenance	Shall have area to maintain and repair firefighting equipment at 120 net square feet. Provide area for a work bench with adequate lighting and ample storage. This room area to be adjacent to the Equipment Wash/Disinfection Area and shall be accessible from the Apparatus Bay. Provide an oil-water separator with holding tank for waste water from all drains.
Emergency Medical Services (EMS) Equipment Storage	Shall have Emergency Medical Services storage area for supplies at 25 net square feet. Emergency Medical Services storage shall be fully conditioned, accessible from the Apparatus Bay and shall be restricted and

## The Army Standard for Fire Stations, March 2010

	controlled. In the Headquarters stations this area shall be located in the Hazardous Material/Chemical, Biological, Radiological, Nuclear, Explosive Equipment Storage area.
(Hazardous Material/Chemical, Biological, Radiological, Nuclear, Explosive Equipment Storage (HAZMAT/CBRNE) and Spare Personal Protective Equipment (SPPE) Storage	<ol style="list-style-type: none"> <li>1. Shall have storage area to house equipment classified for use with hazardous materials. Sufficient open shelf storage areas shall be provided. This area shall be accessible from the Apparatus Bay. <ul style="list-style-type: none"> <li>▪ 240 net square feet shall be provided for a One-Company Fire Station.</li> <li>▪ 360 net square feet shall be provided for a Two-Company Fire Station.</li> <li>▪ 480 net square feet shall be provided for a Three-Company Fire Station.</li> </ul> </li> <li>2. The Hazardous Material/Chemical, Biological, Radiological, Nuclear, Explosive Equipment Storage area shall contain a Logistics Officer area. This area is a typical office space that shall contain a workstation at 80 net square feet.</li> <li>3. In the Headquarters stations, the Emergency Medical Services Equipment Storage shall be located in the Hazardous Material/Chemical, Biological, Radiological, Nuclear, Explosive Equipment Storage area at 25 net square feet.</li> </ol>
Fire Extinguisher Inspection (Non Flight Line) Maintenance and Storage-Option for the Clean-Up Room or the Personal Protective Equipment (PPE) Gear Storage Room	<ol style="list-style-type: none"> <li>1. This area accommodates maintenance and service of fire extinguishers at 160 net square feet. This area shall be accessible from the Apparatus Bay.</li> <li>2. As required by installation mission, this room may be a Clean-Up Room. This area provides showers and lockers for the firemen to decontaminate themselves before entering the living portion of the fire station. A service window shall be provided to the Protective Clothing Laundry room. <ul style="list-style-type: none"> <li>▪ Two private showers w/ changing areas and full privacy doors shall be provided for a One-Company Fire Station.</li> <li>▪ Two private showers w/ changing areas and full privacy doors shall be provided for a Two-Company Fire Station.</li> <li>▪ Three private showers w/ changing areas and full privacy doors shall be provided for a Three-Company Fire Station.</li> </ul> </li> <li>3. As required by the installation's mission, this room may be a Personal Protective Equipment Gear Storage Room. Shall have a locker area to accommodate Personal Protective Equipment. The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear or filtration equipment that is designed to filter and remove gaseous emissions from Personal Protective Equipment shall be used. The locker layout shall allow free air circulation around and throughout the clothing.</li> </ol>
Fire Extinguisher (Flight Line) Maintenance and Storage-Option for the Clean-Up	<ol style="list-style-type: none"> <li>1. This area accommodates maintenance and service of fire extinguishers at 160 net square feet. This area shall be accessible from the Apparatus Bay. This area accommodates maintenance and service of flight line fire</li> </ol>



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Room or the PPE Gear Storage Room	<p>extinguishers and includes both an indoor storage/maintenance and an outdoor storage area.</p> <p>2. As required by installation mission, this room may be a Clean-Up Room. This area provides showers and lockers for the firemen to decontaminate themselves before entering the living portion of the fire station. A service window shall be provided to the Protective Clothing Laundry room.</p> <ul style="list-style-type: none"> <li>▪ Two private showers w/ changing areas and full privacy doors shall be provided for a One-Company Fire Station.</li> <li>▪ Two private showers w/ changing areas and full privacy doors shall be provided for a Two-Company Fire Station.</li> <li>▪ Three private showers w/ changing areas and full privacy doors shall be provided for a Three-Company Fire Station.</li> </ul> <p>3. As required by the installation's mission, this room may be a Personal Protective Equipment Gear Storage Room. Shall have a locker area to accommodate Personal Protective Equipment. The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear or filtration equipment that is designed to filter and remove gaseous emissions from Personal Protective Equipment shall be provided. The locker layout shall allow free air circulation around and throughout the clothing.</p>
Storage of Structural and Aircraft Rescue Fire Fighting (ARFF) Agent	<p>As dictated by mission requirements with at least one required per department, this area is a single-story structure separate from the fire station building. It shall be located along the drive leading into the Apparatus Bay for ease of loading and unloading of firefighting agents. 75 SF per Aircraft Rescue Fire Fighting truck and 48 SF per structural truck are required for sizing.</p>
Administrative & Training (Room Features)	<p><b>Shall group all the administrative offices and training/support areas of similar function in the same general area and this general area shall be considered the Administrative Office Area.</b></p> <p><b>The following offices shall be identified and included in every Headquarters facility: Provide separate dedicated offices for the Fire Chief, Deputy Fire Chief, Assistant Chief, Training Officer, Assistant Chief for Fire Prevention, Inspector(s), Emergency Medical Services (EMS), and Hazardous Materials (HAZMAT) Safety. In the Inspector(s)' office, there is one inspector per company. Provide a Lobby, ABA Toilet, General Administration Storage, Department Training Room, Computer Training/Testing Room, and Telecommunications Room. All Dispatch and dispatch-like functions shall be grouped together. Dispatch Areas include: Dispatch Supervisor, Dispatch Toilet, and Dispatch Kitchenette, and Uninterrupted Power Source (UPS) Room.</b></p> <p><b>The following offices shall be identified and included in every Satellite facility: Provide separate dedicated office for the Stations Officer's Office/Watch Desk Area with an adjacent UPS Room. Provide a Lobby, ABA Toilet, General Administration Storage, Computer</b></p>

	<b>Training/Testing Room, and Telecommunications Room.</b>
Fire Chief's Suite	<ol style="list-style-type: none"> <li>1. This typical office space at 200 net square feet shall contain a workstation, private dorm room at 85 net square feet, and private toilet at 60 net square feet. In the private toilet provide water closet, shower, and lavatory. Shall be adjacent to the Deputy Chief's Office and directly off the Lobby. Operable windows shall provide natural light. Anti-terrorism issues, especially in outside the continental US (OCONUS) locations with regard to natural light provisions shall be addressed.</li> <li>2. Independent environmental control shall be provided for the Fire Chief's Office.</li> </ol>
Fire Chief's Conference Room	This area shall provide conference space at 240 net square feet for the station on-duty personnel and provide space for a small conference table for 8 to 10 people. The Fire Chief's Conference Room shall be located off of the corridor in the Administrative Office area.
Deputy Chief's Office	<ol style="list-style-type: none"> <li>1. This typical office space at 120 net square feet shall contain a workstation and be located adjacent to the chief's office and directly off the lobby.</li> <li>2. Independent environmental control shall be provided for the Deputy Chief's Office.</li> </ol>
Station Officer's Office/Watch Desk	<p>This area at 230 net square feet serves to control public access to the station and shall contain a Watch Desk whose function is to receive emergency calls from dispatch. This area contains the security monitors if provided for the station and is occupied 24 hours a day 7 days a week. This area shall have direct access to the apparatus bay and the lobby. Operable windows shall provide natural light. Anti-terrorism issues, especially in outside the continental US (OCONUS) locations with regard to natural light provisions. Independent environmental control shall be provided.</p> <ul style="list-style-type: none"> <li>▪ The UPS room at 60 net square feet is the termination point for all data and communication utilities to support the Station Officer's Office/Watch Desk area only. This room also houses the equipment racks for the Station Officer's Office/Watch Desk area's computer networks, telephone, communication feeds, and an UPS. The UPS room shall be adjacent to and accessible from the Station Officer's Office/Watch Desk area.</li> </ul>
Assistant Chief's Suite	<ol style="list-style-type: none"> <li>1. This typical office space at 120 net square feet shall contain a workstation, private dorm room at 85 net square feet, and private toilet at 60 net square feet. The dorm room shall have direct access from the Assistant Chief's office. In the toilet provide water closet, shower, and lavatory. The toilet shall have access from the Assistant Chief's dorm room and the Station Captain's dorm room. The Assistant Chief area shall be located off of the corridor in the Administrative Office area.</li> <li>2. Independent environmental control shall be provided for the Assistant Chief's Suite.</li> </ol>
General Administration	Shall provide storage at 80 net square feet for general administration and

Storage	office supplies. Shall be located off of the corridor in the Administrative Office area. Provide built in storage shelving.
Lobby	Shall be at 100 net square feet and serves as the entrance to the facility and be a gathering/waiting space for the visiting public. The lobby is the entrance into the Administrative Office area and shall be recognizable from the outside as a well-lit, inviting space.
Public Toilet	Shall provide an ABA accessible toilet at 48 net square feet with a lavatory and water closet off of the Lobby area.
Dispatch's Suite	<p>1. This room at 256 net square feet functions to receive and dispatch fire related emergency related calls. This room also serves to control public access to the station. This area contains the security monitors for the station and is occupied 24 hours a day, 7 days a week. Provide free access area around the consoles for this room. Provide a dedicated toilet and kitchenette directly adjacent to and accessible from the room for staff use. Provide tinted windows. If possible, operators shall be able to see exterior conditions. Antiterrorism issues, especially in outside the continental US (OCONUS) locations with regard to natural light provisions shall be addressed. This area shall have direct access from the lobby.</p> <ul style="list-style-type: none"> <li>▪ A workstation area shall be provided for a Dispatch Supervisor. The Dispatch Supervisor shall be located in the Dispatch area.</li> <li>▪ Shall provide ABA accessible toilet at 48 net square feet with a lavatory and water closet adjacent to and accessible from the Dispatch area for staff use.</li> <li>▪ Shall provide kitchenette at 20 net square feet with a kitchen sink and disposal adjacent to and accessible from the Dispatch area for staff use.</li> <li>▪ The UPS room at 60 net square feet is the termination point for all data and communication utilities to support the Dispatch area only. This room also houses the equipment racks for the Dispatch area's computer networks, telephone, communication feeds, and an UPS. The UPS room shall be adjacent to and accessible from the Dispatch area.</li> </ul> <p>2. Independent environmental control equipment shall be provided for the Dispatch Suite.</p>
Telecommunications Room	Shall provide a preferably centrally located room at 180 net square feet for the termination of all data and communication utilities in the facility. There shall be a minimum of one Telecommunications Room on each floor, designed in accordance with I3A Guide and ANSI/EIA/TIA-569-B.
Assistant Chief for Fire Prevention's Office	This typical office space at 120 net square feet shall contain a workstation located adjacent to and accessible from the Inspectors' Office area or accessible from the corridor in the Administrative Office area.
Inspector(s)' Office	This typical office space contains workstations for the Fire Inspectors located adjacent to and accessible to the Assistant Chief for Fire

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	<p>Prevention's Office. This area shall be located off of the corridor in the Administrative Office area.</p> <ul style="list-style-type: none"> <li>▪ 144 net square feet shall be provided for a One-Company Fire Station.</li> <li>▪ 288 net square feet shall be provided for a Two-Company Fire Station.</li> <li>▪ 432 net square feet shall be provided for a Three-Company Fire Station.</li> </ul>
Training Officer's Office	<p>This typical office space at 100 net square feet shall contain a workstation. Observation windows shall be provided to the Computer Training/Testing Room and Department Training Room to monitor and control access. This area shall be located off of the corridor in the Administrative Office area.</p>
Department Training Room	<ol style="list-style-type: none"> <li>1. Shall provide a room for continuing education and training. This area shall be located off of the corridor in the Administrative Office area. Access to the room shall be controlled by the Training Officer. Operable windows shall provide natural light. Anti-terrorism issues, especially in outside the continental US (OCONUS) locations with regard to natural light provisions shall be addressed. <ul style="list-style-type: none"> <li>▪ 420 net square feet shall be provided for a One-Company Fire Station.</li> <li>▪ 700 net square feet shall be provided for a Two-Company Fire Station.</li> <li>▪ 980 net square feet shall be provided for a Three-Company Fire Station.</li> </ul> </li> <li>2. Shall provide a separate room at 80 net square feet for storage of audiovisual equipment, media, and additional equipment and furnishings adjacent to and with direct access from the Department Training Room.</li> <li>3. Independent environmental control shall be provided for the Department Training Room.</li> </ol>
Computer Training/Testing Room	<ol style="list-style-type: none"> <li>1. Shall provide a room at 190 net square feet for Computer Training and Testing consisting of carrels for study and testing. This area shall be located off of the corridor in the Administrative Office area.</li> <li>2. In Headquarters Stations, access to the room shall be controlled by the Training Officer.</li> <li>3. Independent environmental control shall be provided for the Computer Training/Testing Room.</li> <li>4. In Satellite Stations, this room may be an Inspector(s)' Office as required by the installation's mission.</li> </ol>
Emergency Medical Services (EMS) Office	<p>This typical office space at 80 net square feet shall contain a workstation. This area shall be located off of the corridor in the Administrative Office area.</p>
Hazardous Materials	<p>This typical office space at 120 net square feet shall contain a workstation. This area shall be located off of the corridor in the Administrative Office</p>

(HAZMAT) Safety Office	area.
Living (Room Features)	<p><b>Shall group all the sleeping and living areas of similar function in the same general area. This general area shall be considered the Living Area.</b></p> <p><b>The following rooms shall be identified and included in the Living Area of every Headquarters facility: Day/Training Room, Recreation Room, Janitor's Closet, Dorm Rooms, Laundry Room, Bathroom/Showers/Changing, Additional Toilet/Shower, and Fitness Room.</b></p> <p><b>The following rooms shall be identified and included in the Living Area of every Satellite facility: Day/Training Room, Janitor's Closet, Dorm Rooms, Laundry Room, Bathroom/Showers/Changing, and Fitness Room.</b></p>
Day/Training Room	<p>Shall be configured like a large residential kitchen/dining/living room. Shall be flexible to accommodate various functions such as informal meetings and group training for the number of companies on duty. Kitchen shall be sized to provide ample room for meal preparation for the entire facility's overnight population. All kitchen appliances shall be light commercial grade. Operable windows shall provide natural light. Anti-terrorism issues, especially in outside the continental US (OCONUS) locations with regard to natural light provisions shall be addressed. Separate dry and cold food storage shall be provided for each shift. Access shall be off the corridor of the Living Area and shall have direct access to the outdoor Patio.</p> <ul style="list-style-type: none"> <li>▪ 648 net square feet shall be provided for a One-Company Fire Station.</li> <li>▪ 1,296 net square feet shall be provided for a Two-Company Fire Station.</li> <li>▪ 1,944 net square feet shall be provided for a Three-Company Fire Station.</li> </ul>
Dorm Rooms	<p>1. Shall provide private quarters for the firefighters' sleeping duty shifts that promote comfort and relaxation. Each room shall be shared by two firefighters of different crew/shifts so that the room is never occupied simultaneously. Access shall be from the Living Area's corridor and operable windows shall provide natural light in every dorm room. Anti-terrorism issues, especially in outside the continental US (OCONUS) locations with regard to natural light provisions shall be addressed.</p> <ul style="list-style-type: none"> <li>▪ Five (5) Dorm Rooms at 700 net square feet total shall be provided for a One-Company Fire Station.</li> <li>▪ Ten (10) Dorm Rooms at 1,400 net square feet total shall be provided for a Two One-Company Fire Station.</li> <li>▪ Fifteen (15) Dorm Rooms at 2,100 net square feet total shall be provided for a Three-Company Fire Station.</li> <li>▪ Two (2) Dorm Rooms at 280 net square feet total shall be provided for an EMS requirement based on the Table of Distribution and Allowance (TDA).</li> </ul>

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	<p>2. Space shall be provided for individual wardrobes, beds and nightstands in each dorm room.</p> <p>3. Acoustical privacy between rooms shall be provided.</p> <p>4. Independent environmental control shall be provided for each Dorm Room.</p>
Bathroom/Showers/Changing	<p>Provide a separate men's and women's Bathroom/Showers/ Changing Area. Bathroom/Showers/Changing area shall contain private water closets, lavatory and shower stalls with private changing areas for firefighters. Access shall be off the corridor of the Living Area.</p> <ul style="list-style-type: none"> <li>▪ One-Company Station: Provide 1 water closet, 1 shower, and 1 lavatory for females at 150 net square feet, and provide 2 water closets, 2 showers, and 2 lavatories for males at 250 net square feet.</li> <li>▪ Two-Company Station: Provide 1 water closet, 1 shower, and 1 lavatory for females at 150 net square feet, and provide 4 water closets, 4 showers, and 3 lavatories for males at 325 net square feet.</li> <li>▪ Three-Company Station: Provide 1 water closet, 1 shower, and 1 lavatory for females at 150 net square feet, and provide 4 water closets, 4 showers, and 4 lavatories for males at 350 net square feet.</li> </ul>
Fitness Room	<p>1. Shall provide a room at 437 net square feet to accommodate fitness machines, treadmill, stationary bicycle, elliptical machine, free weights and mats. Room shall be sized to provide free circulation and shall be adjacent to, or in the proximity of, the Bathroom/Showers/Changing area. Access shall be off the corridor of the Living Area.</p> <p>2. Independent environmental control shall be provided for the Fitness Room.</p>
Additional Toilet/Shower	<p>This area shall be a toilet at 60 net square feet with a lavatory, water closet, and shower. Access shall be off the corridor of the Living Area.</p>
Laundry Room	<p>Shall provide a room to accommodate large heavy duty commercial washers and dryers, built-in laundry-folding table and wall-mounted drying rack for the firefighters' personal use. Provide direct dryer exhaust to the exterior of the building. Access shall be off the corridor of the Living Area.</p> <ul style="list-style-type: none"> <li>▪ Provide area at 80 net square feet for one washer and two dryers for a One-Company Fire Station.</li> <li>▪ Provide area at 160 net square feet for two washers and two dryers for a Two-Company Fire Station.</li> <li>▪ Provide area at 240 net square feet for three washers and three dryers for a Three-Company Fire Station.</li> </ul>
Janitor's Closet	<p>Provide a Janitor's closet at 48 net square feet. Provide exhaust ventilation directly to the outside. This room shall be off the corridor of the Living Area and near the Bathroom/Showers/Changing area. An additional Janitor's Closet shall be off the corridor of the Living Area near the Day/Training</p>

	Room in the Two-Story Fire Station.
Recreation Room	<p>Provide a Recreation Room at 240 net square feet in a Headquarters station to accommodate up to two "game units", such as pool tables, foosball tables, ping pong tables or video game consoles. Access shall be off the corridor of the Living Area.</p> <ul style="list-style-type: none"> <li>As dictated by Installation mission requirements this area shall become additional Day/Training Room area.</li> </ul>
Vending	<p>Shall provide space at 40 net square feet for two or more vending machines for snacks and drinks. Vending area shall be conveniently located for use of the firefighters and the fire station staff. Vending shall not be located in the Day/Training Room or Lobby.</p>
Net to Gross Factor	<p>The net-to-gross factor accounts for circulation space, Mechanical Room, Electrical Room, and wall thicknesses. The net-to-gross multiplier for Fire Stations is as follows:</p> <ul style="list-style-type: none"> <li>The net-to-gross multiplier for a One-Story Fire Station is 22%.</li> <li>The net-to-gross multiplier for a Two-Story Fire Station is 30%.</li> </ul>

**GUIDANCE SECTION**

<b>CATEGORY CODE</b>	<b>DESCRIPTION</b>
73010	Fire Station

1. General Design Philosophy: The Standard Army Fire Station is a comprehensive facility designed to support the military firefighters' mission to protect lives, installation facilities and flight-lines. The facility also accommodates the firefighters' administrative functions and provides an environment for fire prevention education and training.

2. General Layout: The square feet and overall size of each Fire Station shall vary in accordance to specific functional components collocated in each facility. The key internal adjacencies are driven by response time. The number, size, and configuration of emergency vehicles necessary to meet the mission of the specific installation are crucial to the sizing of the apparatus bay. OCONUS fire stations may require larger space allocations due to host nation requirements. Special requirements must be coordinated with the CoS Huntsville. Site constraints may drive the need for a two-story structure. Ensure the appropriate adjacencies are maintained for a two-story structure so that the required response times may be achieved. The Administrative & Training areas shall be placed on the first floor.

3. Fire Station Master Planning: The Fire Station shall be easily accessible by military personnel, military personnel family members, and reservists and layouts are driven by response time. The Fire Station shall be sited a minimum of 45 meters (150') from the perimeter of the installation and 25 meters (82') from trash containers, roadways and parking lots. If these standoff distances are not provided, the Fire Station shall be hardened as described in the "DoD Antiterrorism Minimum Standards for Buildings". Reference: UFC 4-010-01 Unified Facilities Criteria – DOD Antiterrorism Minimum Standards for Buildings. Site to be compatible with the site planning and style of adjacent existing site.

4. Signage: As a minimum the facility shall be identified as a "Fire Station". Coordinate the signage with the Installation Design Guide (IDG) standards. The installation or community name or geographic location of the facility may be used for public identification purposes. Location of the sign is a site adaptation issue.

5. Interior Signage: Provide room identification signage and similar type signs for all rooms. Coordinate the signage with the Installation Design Guide.

6. Exterior Construction: Use sustainable, low maintenance finish materials. Coordinate the exterior finishes with the Installation Design Guide. Building to be compatible with the architecture of adjacent existing structures.

7. Interior Construction: Use sustainable, durable, impact resistant, low volatile organic compounds (VOC), low maintenance finish materials. Coordinate the interior/exterior finishes with the Installation design standards. Construction and finishes (walls, floor, and ceiling) shall support the cohesive image and theme of the facility. Design the living areas of the facility, such



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as the Day Room and the Dorm Rooms, to reflect a residential, non-institutional character. Counters, casework, and cabinets shall be of high-quality and durable construction.

8. Interior Glass: All interior glass must be tempered safety glass and mirrors must be constructed with break-resistant materials.

9. Acoustics: Design the facility to provide a comfortable acoustical environment. Provide comprehensive sound isolation and sound absorption measures for individual spaces as appropriate. Provide acoustical design to prevent sound from noisy spaces such as corridors, toilets, elevator machine rooms, and mechanical rooms from having negative impact on the adjacent spaces.

10. Landscaping: Provide materials natural to the area to limit irrigation and maintenance.

11. Utilities: Use underground utility distribution lines, where feasible.

12. Heating, Ventilating and Air Conditioning (HVAC): The HVAC system(s) shall provide heating and air conditioning subject to geographical requirements for the entire facility, excluding the apparatus bay and mechanical room, which require only heating. Radiant heating shall be used for Apparatus Bay heating and radiant floor heating shall be used under all Apparatus Bay doors in cold climates to prevent the doors from freezing to the pavement. A system with zoning flexibility shall be provided. The mechanical room shall have an exhaust fan.

13. Roofline: Flat roofs are not allowed, unless compatibility with existing structures are required. Provide only slope type roofs with a pitch of not less than 3/12.

14. Exterior Windows: Provide all exterior windows with window treatment allowing manual control of exterior light. Do not provide skylights in any location. Exterior windows are an important element that provides daytime lighting to the overall fire station design.

15. Antiterrorism/Force Protection: Facility shall be evaluated for security requirements in accordance with UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings, latest edition.

16. Gross Area Calculation: Gross floor areas are calculated in accordance with the latest edition of US Army Technical Instructions 800-01 (TI 800-01), Design Criteria.

17. Physical Security: Facility shall be evaluated for physical security risks using DA Pamphlet 190-51, Risk Analysis for Army Property. High value equipment stored in these facilities should be secured and accounted for in accordance with Section III of AR 190-51, Security of Unclassified Army Property (Sensitive and Nonsensitive).

18. Recycle Space: Provide an easily accessible area that serves the entire building and is dedicated to the collection and storage of non-hazardous materials for recycling, including at a minimum: paper, corrugated cardboard, glass, plastics, and metals.

19. Patio Space: If an attached awning is provided, refer to NFPA 13 for the fire protection requirements.

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20. Additional Space: Additional facility capability may include an Emergency Operations Center (EOC) situation room (if required by the installation and validated by HQDA), or a host nation employee dayroom as mandated by master labor contracts (MLC) or Status of Forces Agreement (SOFA). The EOC in the head quarters facility is a specialized conference room used in cases of major operations to manage and coordinate rescue and emergency service efforts. It shall be set up to handle planned and ad-hoc meetings and a high volume of telephone and computer communications.

21. Compliance: The Army Standard may identify an Army regulation, technical guide or other written guidance as mandatory criteria. The Corps of Engineers CoS provides the first line compliance to Standard review. The Facilities Design Team in conjunction with the CoS shall resolve any issues where there may be conflicting, unclear, or no compliance measurement threshold. Resolution may require senior leadership guidance or amendment of the Army Standard. The Army Standard is not intended to provide compliance criteria detailed in references, regulations, industry standards, or the standard design.

## REFERENCE CRITERIA

The designs shall use the latest editions of the following design criteria:

- ADA and ABA Accessibility Guidelines for Buildings and Facilities, July 2004, United States Access Board, <http://www.access-board.gov/ada-aba.htm>
- Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines, ADAAG, United States Access Board, <http://www.access-board.gov/adaag/html/adaag.htm>
- American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) Handbooks and Standards (55, 62.1, 90.1)
- ANSI/EIA/TIA-568, Commercial Building Wiring Standard
- ANSI/EIA/TIA-569, Commercial Buildings Standard for Telecommunications Pathways and Spaces
- Architectural Barriers Act of 1968 (ABA), Public Law 90-480, United States Access Board, <http://www.access-board.gov/adaag/html/adaag.htm>
- AR 380-5, Department of the Army Information Security Program
- AR 405-70, Utilization of Real Property
- AR 415-15, Army Military Construction Program Development and Execution
- AR 420-1, Army Facilities Management
- Army SDD LEED NC Silver Policy
- AWI Quality Standards Illustrated
- DA PAM 415-28, Facility Guide To Army Real Property Category Codes
- DG 1110-3-122, Interior Design Guide
- DoD Instruction 4165.57, *Air Installations Compatible Use Zones (AICUZ)*
- DoD Instruction 6055.06, *DoD Fire and Emergency Services Program*
- E.O. 13423, Technical Guidance for Implementing the Five Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings
- ETL 1110-3-491, Sustainable Design for Military Facilities
- IBC – International Building Code
- IPC – International Plumbing Code
- NFPA 13, Standard for the Installation of Sprinkler Systems
- NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
- NFPA 101, Life Safety Code.
- NFPA 403, Standard for Aircraft Rescue and Fire-Fighting Services at Airports
- NFPA 1221, Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems
- NFPA 1500, Standard on Fire Department Occupational Safety and Health Program
- UFC 3-120-10, Interior Design
- UFC 3-210-05FA, Landscape Design and Planting Criteria
- UFC 3-301-01 Structural Engineering
- UFC 3-400-01 Energy Conservation
- UFC 3-410-01FA, Heating, Ventilating, and Air Conditioning
- UFC 3-410-02A, Heating, Ventilating, and Air Conditioning (HVAC) Control Systems
- UFC 3-420-01, Plumbing Systems.
- UFC 3-450-01, Noise and Vibration Control
- UFC 3-500-10, Electrical Engineering
- UFC 3-530-01, Design: Interior and Exterior Lighting and Controls
- UFC 3-600-01, Fire Protection Engineering for Facilities

### **REFERENCE CRITERIA (Cont.)**

- UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings
- UFC 4-023-03, Design of Buildings to Resist Progressive Collapse
- USAISEC, Technical Criteria for the Installation Information Infrastructure Architecture (I3A), latest edition
- USAISEC Technical Guide for the Integration of SECRET Internet Protocol (IP) Router Network (SIPRNET)
- US Army Technical Instructions 800-01 (TI 800-01), Design Criteria
- DA Pamphlet 190-51, Risk Analysis for Army Property
- Section III of AR 190-51, Security of Unclassified Army Property (Sensitive and Nonsensitive)

**Standard Design Criteria  
Fire Stations**60

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**US Army Corps of Engineers  
Engineering and Support Center, Huntsville**

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**STANDARD DESIGN CRITERIA  
FIRE STATIONS**

ONE COMPANY HQ	22 MIN
ONE COMPANY SATELLITE	12 MIN
TWO COMPANY HQ	33 MIN
TWO COMPANY, TWO STORY HQ	33 MIN
TWO COMPANY SATELLITE	22 MIN
THREE COMPANY HQ	44 MIN
THREE COMPANY, TWO STORY HQ	44 MIN
THREE COMPANY SATELLITE	32 MIN

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## Standard Design Criteria

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## **Standard Design Criteria Fire Stations**

### **1. General Requirements:**

- The Fire Stations shall be of commercial construction standards.
- The Fire Stations are comprised of three main essential elements: Apparatus Equipment & Maintenance, Administrative & Training, and Living Areas.
- All Fire Stations will have either the Fire Extinguisher Inspection (Non Flight Line/ Flight Line) Room, Clean-Up Room, or PPE Gear Storage Room based on Installation requirements. If a PPE Gear Storage Room is required, the air quality requirements for PPE storage in the Apparatus Bay will no longer be applicable.
- All Fire Station facilities shall be protected by an automatic fires suppression system and full detection system. Provide carbon monoxide (CO) detection in all sleeping and living areas defined as the individual dorm rooms, the dorm room access hallway(s), and the entire day/training room. Activation of detectors shall sound a local alarm. If monitored by the building fire alarm system, CO detectors shall be monitored as a non-latching supervisory alarm initiating device. Activation of CO detectors shall not sound a general building alarm. Provide fire alarm system smoke detectors in the individual dorm rooms and the dorm room access hallway(s) only. Do not provide detection in the apparatus bay or other areas where exhaust fumes may be present. Activation of smoke detectors shall sound a general building fire alarm.
- Walls separating the living and administrative portions of the building from the apparatus bay and maintenance spaces shall be completely sealed to prevent passage of exhaust emissions and the resulting exposure to building occupants and contamination of spaces.
- Provide simultaneous light and audible control for the following spaces when the firefighter alert system is activated: To the outside, Dorm Room dedicated alert lights, corridor lights from Dorm Rooms to the Apparatus Bay, and the Apparatus Bay lights.
- Unless noted otherwise in this document, all ceiling heights shall be a nominal 8'-0". ]
- Unless noted otherwise in this document, interior walls between rooms shall be provided with acoustical batt insulation or other approved system, to obtain an STC rating of at least 40. CAC shall be a minimum of 38.
- Provide steel doors with vision panels except at storage, janitorial, dorm, electrical/mechanical and toilet areas.
- Where exterior windows are provided the following requirements shall be met. Shall comply with ATFP requirements. Salient characteristics include easy to clean and able to withstand continuous use. Individual windows shall be operable and screens shall be provided.
- All interior glass shall be tempered safety glass and mirrors must be constructed with break-resistant materials.
- Mounting height of all electrical outlets will be in accordance with industry standards.
- Unless noted otherwise in this document, all interior flooring material shall be resilient.



**Standard Design Criteria**  
**Fire Stations**

- In storage rooms where shelves are provided, interior shall be marked with a red line 1 inch in width and located 18 inches below the lowest point of the sprinkler head.
- All caulking used inside the building shall be USDA or NSF approved caulking.
- GFCI outlets shall be installed per electrical code.
- Provide 100% capacity emergency generator back-up power for all Fire Stations.
- Provide mass notification system in accordance with UFC 4-021-01.
- Drive through bays shall be utilized.
- Provide site entrances, exits, service drives and any special circulation areas sized to accommodate the largest vehicle that uses the area. The service drive shall have a controlled access point.
- Based on the electrical design and mechanical/electrical loads, additional electrical room may be added near the apparatus bay and/or second floor. It is the electrical designer responsibility to coordinate with the architectural designer to accommodate additional electrical room square footage requirements and location.

## Standard Design Criteria Fire Stations

### 2. SPACE: Apparatus Bay

- **FUNCTIONAL DESCRIPTION:** The Apparatus Bays house the fire fighting and emergency response vehicles. All bays must accommodate the latest and largest structural and ARFF vehicles. Each bay of the Apparatus Room must include the required support utilities (drops) for vehicles such as exhaust, compressed air, hot and cold water, lighting, and power. Clear spans are preferred for the Apparatus Bays.
- **ADJACENCIES:** Located at the end of Fire Station structure for future expansion. Adjacent to and direct access from Apparatus Bay Support areas and corridor access from Administrative and Living areas.
- **OCCUPANTS:** Fire Station users and Fire fighting and emergency response vehicles storage.
- **MINIMUM AREA:**  
A Standard Structural Apparatus for a One-Company Fire Station shall be 45 ft. Wide X 91 ft. long (4,095 SF) net.  
A Standard ARFF Apparatus for a One-Company Fire Station shall be 50 ft. Wide X 91 ft. long (4,550 SF) net.  
A Standard Structural Apparatus for a Two and Three-Company Fire Station shall be 62 ft. Wide X 91 ft. long (5,642 SF) net.  
A Standard ARFF Apparatus for a Two and Three-Company Fire Station shall be 70 ft. Wide X 91 ft. long (6,370 SF) net.  
An additional Structural bay shall be 17 ft. Wide X 91 ft. Length (1,547 SF) net.  
An additional Structural bay shall be 20 ft. Wide X 91 ft. Length (1,820 SF) net.
- **CEILING HEIGHT:** 16 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface. A non-skid, low-maintenance traffic coating may also be acceptable. Slope floor to trench drains. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet conditions, dirty conditions, and be petroleum resistant), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Ceiling not required; however, consider finishing exposed structure. Coordinate mechanical, electrical and plumbing components. None of the ceiling components can be located below minimum ceiling height.
- **DOORS/FRAME:** Salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device and vision panel.

## Standard Design Criteria

### Fire Stations

- **PLUMBING:** Provide minimum 3-in. diameter water service with 2.5-in. diameter National Standard Threads ball-valve outlets, one (1) at the front of each bay and one (1) at the rear of each bay. Provide an emergency eye wash fountain and shower. Provide foot-operated mop sink with mop hanging rack. Provide connection for ice machine. Provide standard cold water hose bibb for every two truck bays. Provide floor trench drains to accommodate all vehicles. All apparatus room drains should connect to an approved oil/water separator prior to discharge. If an exterior wash area is provided, size the separator for the total volume and connect the exterior drain to this separator.
- **HVAC:** The Apparatus Bay is typically heated. Maintain 55 F (13 C) minimum temperature except in areas with very mild winter conditions. Determine exceptions on a case-by-case basis based on climatic conditions. The Apparatus Bay will not be air conditioned except through waiver process. In addition to climatic conditions, consider the energy costs and sustainability impacts.

A complete Apparatus Bay Air Cleaning System shall be utilized consisting of exhaust filtration for apparatus and for off-gassing from PPE. A hose based Fire Apparatus Vehicle Exhaust Removal System (FAVERS) system may be used in conjunction with the filtration system.

A Fire Apparatus Vehicle Exhaust Removal System (FAVERS) in compliance with NFPA 1500 to eliminate 100% of vehicle exhaust emissions. A direct vent system that evacuates vehicle exhaust directly to the outside is the preferred FAVERS. Makeup air should be distributed so as to minimize drafts and be introduced above apparatus level since diesel exhaust is heavier than air. In this way, the make-up air flow downward will assist in pushing the exhaust fumes out the Apparatus bay doors when open.

Provide compressed air system on self-retracting lines at each vehicle bay. Consider providing a floor radiant heating element at each bay door in colder climates to prevent the door from freezing to the pavement.

- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes. Locate all outlets at 36 in. above finished floor. Provide self-retracting electric drop cords between vehicles that can reach to either end of the bay. Provide backup power sized to provide full unobstructed operation capability of the apparatus bays. Provide power to each retractable bay door.
- **LIGHTING:** Provide per current codes. Provide energy efficient lighting with instant-start feature. Provide doors with a signaling system to indicate fully raised doors. A red/green indicator should be located on the driver's side at 72 in. above finished floor.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide speakers and horns with visual element.
  - Telephone. Provide one line with internal two-way communication.
  - Data. Provide data drops as required by equipment.
  - Security. None required.
- **ACOUSTICS:** None

## **Standard Design Criteria Fire Stations**

- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:**  
For Structural bays provide 14 ft. by 14 ft. apparatus bay doors with electric eye and/or automatic reverse device. For ARFF bays provide 18 ft. by 18 ft. doors as recommended by NFPA 403. Even if ARFF vehicles are only intended to be housed on one side of a double bay, provide the 18 ft. by 18 ft. doors on both sides to permit drive through and to allow flexibility of use. Provide manual means to open doors in case of power failure. If solid door panels are used, provide insulated doors. Consider providing doors with radio operated closing devices that can be activated from the vehicle.

Ensure both the internal floor slope and the approach drive slope allow the fire protection vehicles to transition into and out of the Apparatus Bay without bottoming out or without impeding driver sightlines.

## Standard Design Criteria

### Fire Stations

#### 3. **SPACE: Station Captain's Suite** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** This area includes a typical office space and workstation. An adjacent private bedroom should be directly accessible from the Fire Chief's Office.
- **ADJACENCIES:** Shall be accessible from the Apparatus Bay and an observation window shall be provided to the Apparatus Bay. Shall be adjacent to the Assistant Chief/Shift Supervisor's Suite. The private bedroom shall have direct access to the Assistant Chief/Shift Supervisor's private toilet.
- **OCCUPANTS:** Station Captain.
- **MINIMUM AREA:**  
Station Captain's Suite: 120 SF, Net.  
Private Dorm Room: 85 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU) at shared walls with Apparatus Equipment & Maintenance areas. GWB is an allowable material, including a furred application attached to the CMU walls. Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device and the office door with a vision panel.
- **OBSERVATION WINDOW/FRAME:** Salient characteristics include durability. Glass shall be tinted for privacy.
- **PLUMBING:** None.
- **HVAC:** Provide independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide smoke and CO detectors.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computers and other office equipment.

## Standard Design Criteria Fire Stations

- **LIGHTING:** Provide per current codes. Provide residential-style fixtures and task lighting at individual desks. In addition to the ambient and task lighting fixtures, provide a dedicated alert light fixture that is controllable from the Watch Desk/Dispatch and tied into the firefighting alert system with a red-tinted bulb or lens.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide one outlet in the office area and one outlet in the bedroom area.
  - PA/Audio. Provide speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. Provide data drops as required by equipment.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** The Station Captain's Suite will be located off of the Apparatus Bay. Walls shared with the Administrative & Training areas are allowed to be of materials other than CMU.

## Standard Design Criteria

### Fire Stations

#### 4. **SPACE: Personal Protection Equipment (PPE) Gear Storage**

- **FUNCTIONAL DESCRIPTION:** This area provides storage for the firefighters' protective gear. A well-ventilated locker is assigned to each member of the firefighting crew. Sufficient floor area in front of each locker is required for easy access during emergencies.
- **ADJACENCIES:** Located along the side walls of the Apparatus Bay. Should be directly accessible from the Apparatus Bay if required to be a room.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** Room: 160 SF, Net. If part of Apparatus Bay, area is included in the Apparatus Bay net area.
- **CEILING HEIGHT:** 8 ft. minimum. If part of Apparatus Bay, shall meet the Apparatus Bay ceiling requirements.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A non-skid, low-maintenance traffic coating may also be acceptable. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet and dirty conditions), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panel (ACP) or gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects. If part of Apparatus Bay, shall meet the Apparatus Bay ceiling requirements.
- **DOORS/FRAME:** Salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Doors shall be provided with self-closing device and vision panel.
- **PLUMBING:** A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design. If part of Apparatus Bay, provide hose bib.
- **HVAC:** The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside or filtration equipment that is designed to filter and remove gaseous emissions from PPE shall be provided. If part of Apparatus Bay, the area shall have an air quality system to filter and remove gaseous emissions from stored gear.
- **FIRE PROTECTION:** Provide per current codes.

## Standard Design Criteria Fire Stations

- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide speakers and horns with visual element.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** Locker layout should permit free air circulation around and throughout clothing.



## Standard Design Criteria

### Fire Stations

#### 5. SPACE: Hose Storage

- **FUNCTIONAL DESCRIPTION:** This area provides for storage of hoses. Hoses are rolled and stored on mobile storage racks.
- **ADJACENCIES:** Located along the side walls of the Apparatus Bay.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** Area is included in the Apparatus Bay net area.
- **CEILING HEIGHT:** Shall meet the Apparatus Bay ceiling requirements.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A non-skid, low-maintenance traffic coating may also be acceptable. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet and dirty conditions), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Shall meet the Apparatus Bay ceiling requirements.
- **DOORS/FRAME:** None
- **PLUMBING:** A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design. Provide hose bib.
- **HVAC:** Ensure space is well ventilated.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes. Dedicated outlets required to support drying equipment (if provided).
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide a speaker.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** None.

## **Standard Design Criteria Fire Stations**

- **CASEWORKS/BUILT-IN EQUIPMENT:** Consider providing hose drying oven in areas where required by climatic conditions.
- **SPECIAL REQUIREMENTS:** Layout should permit free air circulation around the hoses.

## Standard Design Criteria

### Fire Stations

#### 6. SPACE: SCBA Maintenance Room

- **FUNCTIONAL DESCRIPTION:** The Self-Contained Breathing Apparatus (SCBA) Maintenance Room is used for the maintenance and minor repair of the SCBA equipment. It includes a work bench, ample task lighting, and shelving for storage of parts and equipment. The room also contains a Mask Pressure Testing Machine.
- **ADJACENCIES:** Accessible from Apparatus Bay and shall have direct access to the SCBA Compressor Room.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** 144 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A non-skid, low-maintenance traffic coating may also be acceptable. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet and dirty conditions), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panel (ACP) or gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device and vision panel.
- **PLUMBING:** A floor drain for condensate is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside or filtration equipment that is designed to filter and remove gaseous emissions from equipment shall be provided. Provide any additional ventilation requirements for compressor equipment.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes. Provide additional outlets and power as required by equipment.

## Standard Design Criteria

### Fire Stations

- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures. Provide task lighting for the work/service bench.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide a speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. Provide data drops as required by equipment.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide equipment safety cage and storage shelving.
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria Fire Stations

### 7. SPACE: SCBA Compressor Room

- **FUNCTIONAL DESCRIPTION:** The Self-Contained Breathing Apparatus (SCBA) Compressor Room houses the main compressor unit used to charge the apparatus with filtered air.
- **ADJACENCIES:** Provide direct access to the SCBA Maintenance Room.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** 50 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A non-skid, low-maintenance traffic coating may also be acceptable. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet and dirty conditions), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panel (ACP) or gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Doors shall be provided with self-closing device and vision panel.
- **PLUMBING:** Provide compressed air lines to Apparatus Bay and SCBA Maintenance Room. A floor drain for condensate is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside or filtration equipment that is designed to filter and remove gaseous emissions from equipment shall be provided. Provide any additional ventilation requirements for compressor equipment.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes. Provide additional outlets and power as required by equipment.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.

## Standard Design Criteria Fire Stations

- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide a speaker.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** Provide double door access for installation of the main compressor unit to the exterior.

## Standard Design Criteria Fire Stations

### 8. SPACE: Protective Clothing Laundry

- **FUNCTIONAL DESCRIPTION:** Utilized to wash and disinfect firefighters' protective clothing/gear. The room should accommodate large commercial-grade washers and dryers and a drip-dry rack.
- **ADJACENCIES:** Provide direct access through the Apparatus Bay to the exterior. If a Clean-Up Room is provided, the Protective Clothing Laundry Room shall be adjacent to the Clean-Up room and a service window provided.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** One-Company: 100 SF, Net. Two-Company: 180 SF, Net. Three-Company: 150 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A non-skid, low-maintenance traffic coating may also be acceptable. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet conditions, dirty conditions, and spills related to the chemicals within), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide moisture resistant acoustical ceiling panel (ACP) or gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** If doors are provided, salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Doors shall be provided with self-closing device and vision panel.
- **SERVICE WINDOW/FRAME:** Salient characteristics include durability. Only if Clean-Up Room is required in the Fire Station.
- **PLUMBING:** Provide water supply and drain to each washer. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside or filtration equipment that is designed to filter and remove gaseous emissions from equipment shall be provided.
- **FIRE PROTECTION:** Provide per current codes.

## Standard Design Criteria Fire Stations

- **ELECTRICAL:** Provide outlets per current codes. Provide additional outlets and power as required by equipment.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide a speaker.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** None.



## Standard Design Criteria

### Fire Stations

#### 9. SPACE: Equipment Wash/Disinfection

- **FUNCTIONAL DESCRIPTION:** Utilized to clean and disinfect firefighters' protective clothing/gear and equipment when fire trucks return from a fire or other event. It includes a wash-off area where incoming equipment can be washed, desalinated, and dried.
- **ADJACENCIES:** Shall be adjacent to the Work Room/Equipment Maintenance Room and have access from the Apparatus Bay.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** 150 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A non-skid, low-maintenance traffic coating may also be acceptable. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet conditions, dirty conditions, and spills related to the chemicals within), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Shall use stainless steel wainscot in wash area. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide moisture resistant acoustical ceiling panel (ACP) or moisture resistant gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** If doors are provided, salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Doors shall be provided with self-closing device and vision panel.
- **PLUMBING:** Provide floor mop sink, with hose and spray nozzle. Provide a minimum three-compartment stainless steel sink and a drip dryer rack. Provide an oil-water separator with holding tank for wastewater from drains. Provide compressed air supply. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside or filtration equipment that is designed to filter and remove gaseous emissions from equipment shall be provided.
- **FIRE PROTECTION:** Provide per current codes.

## Standard Design Criteria Fire Stations

- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide a speaker.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 10. SPACE: Work Room/Equipment Maintenance

- **FUNCTIONAL DESCRIPTION:** Utilized to for the minor repair and maintenance of firefighters' equipment.
- **ADJACENCIES:** Shall be adjacent to the Equipment Wash/Disinfection Room and have access from the Apparatus Bay.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** 120 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A non-skid, low-maintenance traffic coating may also be acceptable. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet conditions, dirty conditions, and spills related to the chemicals within), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide moisture resistant acoustical ceiling panel (ACP) or moisture resistant gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** If doors are provided, salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Doors shall be provided with self-closing device and vision panel.
- **PLUMBING:** Provide an oil-water separator with holding tank for wastewater from drains. Provide compressed air supply. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside or filtration equipment that is designed to filter and remove gaseous emissions from equipment shall be provided.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes. Provide additional outlets and power as required by equipment.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures. Provide task lighting for work/service bench.

## Standard Design Criteria Fire Stations

- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide a speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 11. **SPACE: EMS Equipment Storage (Including Lockable Medical Cabinet)**

- **FUNCTIONAL DESCRIPTION:** Utilized for the storage of basic first aid supplies. The Lockable Medical Storage Cabinet is often a cabinet or subspace within the EMT Storage area and is for storage of drugs, needles, and other restricted medical supplies. Access to EMT Storage is restricted and controlled to prevent theft and abuse of controlled substances.
- **ADJACENCIES:** Shall be accessible from the Apparatus Bay. The EMS Equipment Storage is located in the HAZMAT/ CBRNE storage area in Headquarters Fire Stations.
- **OCCUPANTS:** EMS Staff
- **MINIMUM AREA:** 25 SF, Net. Area added to the HAZMAT/ CBRNE storage area in Headquarters Fire Stations.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet conditions, dirty conditions, and spills related to the chemicals within), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide "clean room" type acoustical ceiling panel (ACP) or gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Doors shall be provided with self-closing device. Non applicable in a Headquarters Fire Stations.
- **PLUMBING:** None.
- **HVAC:** The space must be fully conditioned.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes. Provide additional outlets and power as required by equipment.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.

## Standard Design Criteria Fire Stations

- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. None required.  
PA/Audio. None required.  
Telephone. None required.  
Data. None required.  
Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide wall shelving units
- **SPECIAL REQUIREMENTS:** In the Satellite Fire Stations provide a keyed lock set at the access point to the space.

## Standard Design Criteria Fire Stations

### 12. **SPACE: HAZMAT/CBRNE and Spare PPE Equipment Storage** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** A dedicated storage room housing only equipment classified for use with hazardous materials. Provide sufficient floor and open shelf storage areas.
- **ADJACENCIES:** Shall be accessible from the Apparatus Bay. The EMS Equipment Storage and Logistics' Office is located in the HAZMAT/ CBRNE storage area in Headquarter Fire Stations.
- **OCCUPANTS:** Logistics Officer/ EMS Staff
- **MINIMUM AREA:** One-Company Headquarters: 240 SF, Net. Two-Company (Two-Story) Headquarters: 360 SF, Net. Three-Company (Two-Story) Headquarters: 480 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet conditions, dirty conditions, and spills related to the chemicals within), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** **Concrete** masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide "clean room" type acoustical ceiling panel (ACP) or gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** **Salient characteristics include easy** to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device and vision panel.
- **PLUMBING:** None.
- **HVAC:** The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside or filtration equipment that is designed to filter and remove gaseous emissions from equipment shall be provided.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.

## Standard Design Criteria Fire Stations

- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. None required.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** Provide sufficient floor and open shelf storage areas. Entrance shall be double doors.



## Standard Design Criteria Fire Stations

### 13. **SPACE: Logistics' Office** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** This area includes a typical office space and workstation.
- **ADJACENCIES:** Shall be accessible from the Apparatus Bay. The Logistics' Office is located in the HAZMAT/ CBRNE storage area in Headquarter Fire Stations.
- **OCCUPANTS:** Logistics Officer
- **MINIMUM AREA:** 80 SF, Net. Area added to the HAZMAT/ CBRNE storage area.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet conditions, dirty conditions, and spills related to the chemicals within), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE: Concrete** masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide "clean room" type acoustical ceiling panel (ACP) or gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device and vision panel.
- **PLUMBING:** None.
- **HVAC:** The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside or filtration equipment that is designed to filter and remove gaseous emissions from equipment shall be provided.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computers and other office equipment.
- **LIGHTING:** Provide per current codes. Provide task lighting at workstation. In addition to the ambient and task lighting fixtures, provide a dedicated alert light fixture that is controllable from the Watch Desk/Dispatch and tied into the firefighting alert system with a red-tinted bulb or lens.

## Standard Design Criteria Fire Stations

- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide one outlet in the office area.
  - PA/Audio. Provide a speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. Provide data drops as required by equipment.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 14. **SPACE: Fire Extinguisher Inspection (Non Flight Line)**

- **FUNCTIONAL DESCRIPTION:** This room accommodates a work bench with adequate lighting to perform maintenance and service of extinguishers, safety cage, scale, recharge kit, and parts storage bins.
- **ADJACENCIES:** Shall be directly accessible from the Apparatus Bay. Based on installation requirements, shall have an outdoor agent storage area.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** 160 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A non-skid, low-maintenance traffic coating may also be acceptable. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet and dirty conditions), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panel (ACP) or gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device and vision panel.
- **PLUMBING:** Provide a hose bibb and eye wash fountain. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside or filtration equipment that is designed to filter and remove gaseous emissions from equipment shall be provided. Provide a compressed air system with self-retracting lines at the work bench.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures. Provide task lighting at workstation.

## Standard Design Criteria Fire Stations

- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. Provide one outlet in the office area.  
PA/Audio. Provide a speaker.  
Telephone. Provide one line with internal two-way communication.  
Data. Provide quad outlet at work bench and in locations where required to accommodate equipment.  
Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** Entrance shall be double doors. Based on installation requirements, shall have an outdoor agent storage area. The outdoor storage area is covered, enclosed with a secured screen. The outdoor storage area is covered, enclosed with a secured screen, and accommodates tank recovery, spare tanks, and spare gaseous agent re-servicing tanks at 40 SF, net per station.

## Standard Design Criteria

### Fire Stations

#### 15. **SPACE: Fire Extinguisher Inspection (Flight Line)**

- **FUNCTIONAL DESCRIPTION:** This room accommodates a work bench with adequate lighting to perform maintenance and service of extinguishers, safety cage, scale, recharge kit, and parts storage bins.
- **ADJACENCIES:** Shall be directly accessible from the Apparatus Bay. Based on installation requirements, shall have an outdoor agent storage area.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** 160 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A non-skid, low-maintenance traffic coating may also be acceptable. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet and dirty conditions), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panel (ACP) or gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device and vision panel.
- **PLUMBING:** Provide a hose bibb and eye wash fountain. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside or filtration equipment that is designed to filter and remove gaseous emissions from equipment shall be provided. Provide a compressed air system with self-retracting lines at the work bench.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures. Provide task lighting at workstation.

## Standard Design Criteria Fire Stations

- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide one outlet in the office area.
  - PA/Audio. Provide a speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. Provide quad outlet at work bench and in locations where required to accommodate equipment.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** Entrance shall be double doors. Based on installation requirements, shall have an outdoor agent storage area. The outdoor storage area is covered, enclosed with a secured screen. The outdoor storage area is covered, enclosed with a secured screen, and accommodates tank recovery, spare tanks, and spare gaseous agent re-servicing tanks at 40 SF, net per station.

## Standard Design Criteria Fire Stations

### 16. SPACE: Clean-Up Room

- **FUNCTIONAL DESCRIPTION:** This area provides showers and lockers for the fire station staff to decontaminate themselves before entering the Living portion of the Fire Station. A service window shall be provided to the Protective Clothing Laundry room.
- **ADJACENCIES:** Shall be directly accessible from the Apparatus Bay. The Clean-Up Room shall be adjacent to Protective Clothing Laundry Room and a service window provided.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** 160 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet and dirty conditions), easily repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide skim-coated cementitious backer board ceiling. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **SERVICE WINDOW/FRAME:** Salient characteristics include durability.
- **PLUMBING:** Provide private shower stalls. See Special Requirements below for distribution. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes.

## Standard Design Criteria Fire Stations

- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. None required.  
PA/Audio. Provide a speaker.  
Telephone. None required.  
Data. None required.  
Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide 12-in deep minimum solid surface materials for seating. Provide 24-in. deep minimum resin based materials for showers.
- **SPECIAL REQUIREMENTS:** Provide sufficient floor areas for lockers. The following shall be provided:  
  
Minimum two private showers w/ changing areas and full privacy doors shall be provided for One-Company Fire Stations.  
  
Minimum two private showers w/ changing areas and full privacy doors shall be provided for Two-Company Fire Stations.  
  
Minimum three private showers w/ changing areas and full privacy doors shall be provided for Three-Company Fire Stations.



## Standard Design Criteria Fire Stations

### 17. SPACE: Storage of Structural and ARFF Agent

- **FUNCTIONAL DESCRIPTION:** This area is a single-story structure utilized for ease of loading and unloading of firefighting agents.
- **ADJACENCIES:** Shall be separate from the Fire Station building and located along the drive leading into the Apparatus Bay.
- **OCCUPANTS:** Fire Station Staff
- **MINIMUM AREA:** 160 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide a sealed concrete surface sloped to drain. A non-skid, low-maintenance traffic coating may also be acceptable. A base material, appropriate for the flooring material used, is required. Salient characteristics include easy to clean, durable (able to withstand wet and dirty conditions), easily repairable, and easy to maintain.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU). Provide epoxy paints or industrial latex on all wall surfaces. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panel (ACP) or gypsum wall board (GWB) ceiling with industrial latex or epoxy paint. Salient characteristics include durable and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include easy to clean, easy to maintain and repair, and compliance to building codes. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide a hose bibb and floor drain. Provide eye wash fountain.
- **HVAC:** Provide per current codes. The area shall be kept under constant negative pressure to evacuate gaseous emissions from stored gear to the outside.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. Provide one outlet in the office area.

## Standard Design Criteria Fire Stations

PA/Audio. Provide a speaker.

Telephone. Provide one line with internal two-way communication.

Data. Provide quad outlet at work bench and in locations where required to accommodate equipment.

Security. None required.

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** Entrance shall be double doors.

## Standard Design Criteria

### Fire Stations

#### 18. **SPACE: Fire Chief's Office Suite** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** The area includes a typical office space and workstation. An adjacent private bedroom and private toilet/shower should be directly accessible from the Fire Chief's Office.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be adjacent to the Deputy Chief's Office and directly off the Lobby.
- **OCCUPANTS:** Fire Chief.
- **MINIMUM AREA:**  
Fire Chief's Office: 200 SF, Net.  
Fire Chief's Dorm Room: 85 SF, Net.  
Fire Chief's Toilet/Shower: 60 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide durable commercial carpeting in office and sleeping area. Provide ceramic tile and ceramic tile base in toilet/shower. A base material, appropriate for the flooring material used, is required. Base shall be sealed to the flooring in the toilet/shower. Salient characteristics include durable and easy to clean, repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. In toilet/shower provide moisture and mildew resistant gypsum wall board. Provide a low-maintenance finish such as egg-shell latex paint. On all walls, a minimum 48" tall wainscot is required that is impervious to water and be able to withstand daily sanitizing. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. Consider providing vinyl wall coverings in the toilet/showers.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP) in office and sleeping areas. Provide moisture resistant gypsum board ceiling in the toilet. Consider semi-gloss industrial paint in the toilet. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide water closet, shower, and lavatory. Consider providing floor drain.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.

## Standard Design Criteria Fire Stations

- **FIRE PROTECTION:** Provide per current codes. Provide smoke and CO detectors.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computers and other office equipment.
- **LIGHTING:** Provide per current codes. Provide residential-style fixtures and task lighting at desk. In addition to the ambient and task lighting fixtures, provide a dedicated alert light fixture that is controllable from the Watch Desk/Dispatch and tied into the firefighting alert system with a red-tinted bulb or lens.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide one outlet in the office area and one outlet in the bedroom area.
  - PA/Audio. Provide speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. Provide data drops as required by equipment.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide 24-in deep minimum solid surface materials for countertop. Provide 24-in deep minimum resin based materials for shower.
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 19. **SPACE: Fire Chief's Conference Room** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** The area includes a space for a small conference table for 8 to 10 people.
- **ADJACENCIES:** Directly accessible from the corridor in the Administrative Office area.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:** 240 SF, Net.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP) or gypsum wall board (GWB) ceiling. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device and vision panel.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computers and other office equipment.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures. In addition to the ambient lighting fixtures, provide a dedicated alert light fixture that is controllable from the Watch Desk/Dispatch and tied into the firefighting alert system with a red-tinted bulb or lens.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide one outlet.
  - PA/Audio. Provide speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. Provide data drops as required by equipment.

## Standard Design Criteria

### Fire Stations

Visual. Provide outlets and data drops for an overhead projector and electric overhead projector screen.

Security. None required.

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** Provide retractable overhead screen and overhead projector mount.

## Standard Design Criteria

### Fire Stations

#### 20. SPACE: Deputy Chief's Office (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** The room includes a typical office space and workstation.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be adjacent to the Fire Chief's Suite and directly off the Lobby.
- **OCCUPANTS:** Fire Chief.
- **MINIMUM AREA:** 120 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide durable commercial carpeting in office and sleeping areas. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP) or gypsum wall board (GWB) ceiling. Consider egg-shell latex paint in office. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computer and other office equipment.
- **LIGHTING:** Provide per current codes. Provide residential-style fixtures and task lighting at desk. In addition to the ambient and task lighting fixtures, provide a dedicated alert light fixture that is controllable from the Watch Desk/Dispatch and tied into the firefighting alert system with a red-tinted bulb or lens.
- **COMMUNICATION:**  
CCTV. None required.

## Standard Design Criteria

### Fire Stations

CATV/Internal Video. Provide one outlet in the office area and one outlet in the bedroom area.

PA/Audio. Provide speaker.

Telephone. Provide one line with internal two-way communication.

Data. Provide data drops as required by equipment.

Security. None required.

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** None.



## Standard Design Criteria

### Fire Stations

#### 21. **SPACE: Station Officer's Office/Watch Desk** (Satellite Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** This room provides space for the station officer and/or company officers to perform their administrative functions. The Station Officer's office may serve to control public access to the station. If a Watch Desk function is required, it is typically included in the Station Officer's Office. The Watch Desk receives emergency calls from the Dispatch and contains the security monitors for the station. It is usually occupied 24 hours a day/7 days a week. The room includes a typical office space and workstations for two people.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be located directly off the Lobby.
- **OCCUPANTS:** Station Officer.
- **MINIMUM AREA:** 230 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide electrical and data outlets per current codes and as needed to support the extensive equipment required. Provide two additional quad outlets at the control center console. Provide a switch controlling operation of Apparatus Bay doors.

## Standard Design Criteria

### Fire Stations

- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures. Provide task lighting at control desk.
- **COMMUNICATION:**
  - CCTV. If CCTV is provided monitors for the facility cameras will be located here. Provide outlets required to support equipment.
  - CATV/Internal Video. Provide outlets required to support required equipment.
  - PA/Audio. Provide simultaneous light and audible control for the entire fire station.
  - Telephone. Provide regular and secure multi-telephone line required to support switch board operation, telephone, and fax.
  - Data. Provide regular and secure data outlets to support required equipment.
  - Security. Provide vision panel to the Apparatus Bay. Provide pin pad/cipher electric lock with remote push button release and manual key override.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 45.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:**
  - Firefighter Alert System:** Provide light and audible control for the following elements when the firefighter alert system is activated: Dorm Room lights (the dedicated alert light), corridor lights from Dorm Rooms to Apparatus Bay, and the Apparatus Bay lights.

Provide a 36 in. (920 mm) free access area around the entire control console. Provide space for Emergency Information Systems computer. Provide tinted windows.

## Standard Design Criteria

### Fire Stations

#### 22. **SPACE: Assistant Chief/Shift Supervisor's Suite** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** The area includes a typical office space and workstation. An adjacent private bedroom and private toilet /shower shall be directly accessible from the Assistant Chief's Office.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be adjacent to the Station's Captain Suite and directly accessible from the corridor in the Administrative Office area. The private toilet/shower shall accessible from the Station's Captain Dorm room, also.
- **OCCUPANTS:** Assistant Chief/Shift Supervisor.
- **MINIMUM AREA:**  
Assistant Chief/Shift Supervisor's Suite: 120 SF, Net.  
Assistant Chief/Shift Supervisor's Dorm Room: 85 SF, Net.  
Assistant Chief/Shift Supervisor's Toilet/Shower: 60 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** In the Office and dorm areas, provide low maintenance sheet or tile vinyl flooring material. Consider providing commercial carpeting. Provide ceramic tile and ceramic tile base in toilet/shower. A base material, appropriate for the flooring material used, is required. Base shall be sealed to the flooring in the toilet/shower. Salient characteristics include durable and easy to clean, repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Concrete masonry units (CMU) at shared walls with Apparatus Equipment & Maintenance areas. GWB is an allowable material, including a furred application attached to the CMU walls. In the office and dorm room, provide a low-maintenance finish such as egg-shell latex paint. In toilet/shower provide moisture and mildew resistant gypsum wall board. Provide a low-maintenance finish such as egg-shell latex paint. On all walls, a minimum 48" tall wainscot is required that is impervious to water and be able to withstand daily sanitizing. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. Consider providing vinyl wall coverings in the toilet/showers.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP) in office and dorm areas. Provide moisture resistant gypsum board ceiling in the toilet. Consider semi-gloss industrial paint in the toilet. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.

## Standard Design Criteria Fire Stations

- **PLUMBING:** Provide water closet, shower, and lavatory. Consider providing floor drain.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide smoke and CO detectors.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computers and other office equipment.
- **LIGHTING:** Provide per current codes. Provide residential-style fixtures and task lighting at desk. In addition to the ambient and task lighting fixtures, provide a dedicated alert light fixture that is controllable from the Watch Desk/Dispatch and tied into the firefighting alert system with a red-tinted bulb or lens.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide one outlet in the office area and one outlet in the bedroom area.
  - PA/Audio. Provide speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. Provide data drops as required by equipment.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide 24-in deep minimum solid surface materials for countertops. Provide 24-in deep minimum resin based materials for shower.
- **SPECIAL REQUIREMENTS:** The Assistant Chief/Shift Supervisor's Suite will likely have CMU walls and more durable finishes than typical offices. The Assistant Chief/Shift Supervisor's Suite walls shared with the Administrative & Training areas are allowed to be of materials other than CMU.

## Standard Design Criteria Fire Stations

### 23. SPACE: General Administration Storage

- **FUNCTIONAL DESCRIPTION:** This area is general storage for office supplies and other supplies.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be directly accessible from the corridor and/or Lobby in the Administrative Office area.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:** 80 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. None required.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.

**Standard Design Criteria  
Fire Stations**

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 40.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** A minimum of 4 adjustable shelves with heavy duty standards and brackets will be provided. Provide shelves on as many walls of the storage rooms as possible while maintaining adequate circulation space. Shelving shall be able to support 100 pounds per lineal foot.

## Standard Design Criteria Fire Stations

### 24. SPACE: Lobby

- **FUNCTIONAL DESCRIPTION:** This area serves as the entrance to the facility and a gathering/waiting space for the visiting public. The Lobby should be recognizable from the outside as a well-lit, inviting space.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station and is the main entrance into the Fire Station.
- **OCCUPANTS:** Fire Station Visitors.
- **MINIMUM AREA:** 100 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required. Consider stone or quarry tile with stone or tile base.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. Consider providing vinyl wall coverings.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide decorative acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Provide a set of storefront double 3 foot by 7 foot doors, fitted with a locking mechanism and flush panic hardware at the entry. To ensure maximum visibility, doors shall be fully glazed. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide water for an ABA compliant electric water cooler.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Consider outlets for display cases.
- **LIGHTING:** Provide per current codes. Consider decorative lighting fixtures and task lighting.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide speaker.

## Standard Design Criteria Fire Stations

Telephone. Consider providing one line for local and toll-free calls or a pay phone.

Data. None required.

Security. None required.

- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:**  
Provide airlock at main entrance when necessary.

Consider a recessed, built-in mat at entry.



## Standard Design Criteria Fire Stations

### 25. SPACE: Public Toilet

- **FUNCTIONAL DESCRIPTION:** This area shall be an ABA compliant toilet area for visitors.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Public toilets shall be located directly adjacent to the Lobby. Staff toilets shall be accessible from the corridors, and should be spread out around the facility.
- **OCCUPANTS:** Visitor.
- **MINIMUM AREA:** 48 SF, Net.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Floors shall be able to keep water from getting under the flooring material. Salient characteristics include durable and easy to clean, repairable, easy to maintain, and slip resistant. A base material, appropriate for the flooring material used, is required. Base shall be sealed to the flooring.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Providing moisture and mildew resistant gypsum wall board. Provide a low-maintenance finish such as egg-shell latex paint. On all walls, a minimum 48" tall wainscot is required that is impervious to water and be able to withstand daily sanitizing. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE.** Provide moisture resistant gypsum board ceiling. Consider semi-gloss industrial paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Door shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **PLUMBING:** 1 ABA compliance water closet, and 1 ABA compliant lavatory. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** Provide per current codes. Local exhaust vent above toilet.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. None required.

## **Standard Design Criteria Fire Stations**

Telephone. None required.

Data. None required.

Security. None required.

- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide 24-in deep minimum solid surface materials for countertop.
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 26. **SPACE: Dispatch's Suite** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** The main access control point with direct visual contact with the entry, lobby, and public toilet. Responsible for receiving and dispatching fire related emergency calls. This area contains the security monitors for the station and is occupied 24 hours a day, 7 days a week. Provide a dedicated toilet and kitchenette, and dedicated IT room directly adjacent to and accessible from the Dispatch Room for staff use. Provide tinted windows. If possible, operators should be able to see exterior conditions.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. This area is adjacent to lobby area. Shall have direct visual control service window to and direct access to the Lobby.
- **OCCUPANTS:** Dispatch staff.
- **MINIMUM AREA:**  
Dispatch's Suite: 256 SF, Net.  
Dispatch's Toilet: 48 SF, Net.  
Dispatch's Kitchenette: 20 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** In the Dispatch and Kitchenette, provide low maintenance sheet or tile vinyl flooring material. Consider providing commercial carpeting. In the toilet, floors shall be able to keep water from getting under the flooring material. A base material, appropriate for the flooring material used, is required. Base shall be sealed to the flooring in the toilet. Salient characteristics include durable and easy to clean, repairable, easy to maintain, and slip resistant.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** In the Dispatch and Kitchenette, provide a low-maintenance finish such as egg-shell latex paint. In the toilet, provide moisture and mildew resistant gypsum wall board. Provide a low-maintenance finish such as egg-shell latex paint. On all walls, a minimum 48" tall wainscot is required that is impervious to water and be able to withstand daily sanitizing. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. Consider providing vinyl wall coverings in the toilet/shower.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** In the Dispatch and Kitchenette, provide acoustical ceiling panels (ACP). In the toilet, provide moisture resistant gypsum board ceiling. Consider semi-gloss industrial paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Door shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.

## Standard Design Criteria

### Fire Stations

- **SERVICE WINDOW/FRAME:** Provide window with pass-through transaction drawer. Salient characteristics include durability.
- **PLUMBING:** Provide an ABA-accessible toilet with a lavatory and water closet. Provide a kitchenette with a kitchen sink and disposal.
- **HVAC:** Provide per current codes. Provide independent environmental control equipment.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes and as needed to support all equipment, including charging equipment for handhelds. Provide a switch controlling open only operation of Apparatus Bay doors.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures and emergency battery back-up. Consider providing task lighting at control desk.
- **COMMUNICATION:**  
CCTV. If CCTV is provided, monitors for the facility cameras will be located here. Provide outlets required to support equipment.  
CATV/Internal Video. Provide outlets required to support equipment.  
PA/Audio. Provide a speaker and a microphone.  
Telephone. Provide regular and secure multi-telephone line required to support switchboard operation, telephone, and fax.  
Data. Provide regular and secure data outlets to support required equipment.  
Security. Provide pin pad/cipher electric lock with remote push button release and manual key override.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 49.
- **CASEWORKS/BUILT-IN EQUIPMENT:** At kitchenette, provide wall and base cabinets with 24-in deep solid surface counter. Provide 24-in deep minimum solid surface materials for countertop.
- **SPECIAL REQUIREMENTS:**  
 Comply with the requirements for "Communication Centers" in NFPA 1221.

Note that some equipment requires free access area around the entire control console. Design this space appropriate to the equipment being provided. Note any special requirements for the E911 system, if appropriate. If required for selected equipment, provide a conduit to the roof for a roof mounted antennae.

**Firefighter Alert System:** Provide light and audible control for the following elements when the firefighter alert system is activated: Dorm Room lights (the dedicated alert light), corridor lights from Dorm Rooms to Apparatus Bay, and the Apparatus Bay lights.

The generator must provide back-up power for all Dispatch Room systems. In addition, provide uninterrupted power supply (UPS) for the dispatch equipment.

## Standard Design Criteria Fire Stations

### 27. SPACE: UPS Room.

- **FUNCTIONAL DISCRPTION:** This room houses the equipment racks for the Dispatch or Station Officer's Office/Watch Desk area's computer networks, telephone, communication feeds, and an Uninterrupted Power Source (UPS).
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. UPS room shall be provided adjacent to and accessible from the Dispatch or Station Officer's Office/Watch Desk area.
- **OCCUPANTS:** Dispatch staff/Station Officer.
- **MINIMUM AREA:** 60 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Salient characteristics include easy to clean, maintain, and repair. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide gypsum wall board (GWB) ceiling. Consider egg-shell latex paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Door shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **SERVICE WINDOW/FRAME:** Provide window with pass-through transaction drawer. Salient characteristics include durability.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes and as needed to support the extensive equipment required. Provide two additional quad outlets. Provide a transient voltage surge suppression panel board.
- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. None required.

## Standard Design Criteria Fire Stations

PA/Audio. None required.

Telephone. Provide telephone line as required to support equipment.

Data. Provide data lines as required to support equipment.

Security. Provide a cipher lock at the door.

- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** Comply with the requirements for USAISEC Technical Guide for Installation Information Infrastructure Architecture (I3A).

## Standard Design Criteria

### Fire Stations

#### 28. SPACE: Telecommunications Room

- **FUNCTIONAL DESCRIPTION:** This room shall be used for the termination of all data and communication utilities in the facility. The equipment racks for the facility's computer networks, telephone, communication feeds, and Uninterrupted Power Source (UPS) are housed in this room.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be directly accessible from the corridor in the Administrative Office area and preferably centrally located in the facility.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:** 180 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide gypsum wall board (GWB) ceiling. Consider egg-shell latex paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Door shall open 180 degrees into the corridor. Door shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes and as needed to support the extensive equipment required. Provide two additional quad outlets. Provide a transient voltage surge suppression panel board.
- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. None required.

## Standard Design Criteria

### Fire Stations

PA/Audio. None required.

Telephone. Provide telephone line as required to support equipment.

Data. Provide data lines as required to support equipment.

Security. Provide a cipher lock at the door.

- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** Comply with the requirements for USAISEC Technical Guide for Installation Information Infrastructure Architecture (I3A).



## Standard Design Criteria Fire Stations

### 29. **SPACE: Assistant Chief of Fire Prevention's Office** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** The room includes a typical office space and workstation.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be adjacent to and directly off the Fire Inspectors' Office.
- **OCCUPANTS:** Assistant Chief of Fire Prevention.
- **MINIMUM AREA:** 120 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computer and other office equipment.
- **LIGHTING:** Provide per current codes. Provide residential-style fixtures and task lighting at desk.
- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. Provide one outlet.

## Standard Design Criteria

### Fire Stations

PA/Audio. Provide speaker.

Telephone. Provide one line with internal two-way communication.

Data. Provide data outlets as required by equipment.

Security. None required.

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 39.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 30. SPACE: Inspector(s)' Office (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** The room includes a typical office space and workstation.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be adjacent to Fire Inspectors' Office. Shall be directly accessible from the corridor in the Administrative Office area.
- **OCCUPANTS:** Fire Inspector(s)' Staff.
- **MINIMUM AREA:**  
One Company Headquarters: 144 SF, Net. One Inspector  
Two Company Headquarters: 288 SF, Net. Two Inspectors  
Three Company Headquarters: 432 SF, Net. Three Inspectors
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computer and other office equipment.
- **LIGHTING:** Provide per current codes. Provide task lighting at desk.
- **COMMUNICATION:**  
CCTV. None required.

## Standard Design Criteria

### Fire Stations

CATV/Internal Video. Provide one outlet.

PA/Audio. Provide speaker.

Telephone. Provide one line with internal two-way communication per Fire Inspector's workstation.

Data. Provide data outlets as required by equipment.

Security. None required.

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 39.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 31. **SPACE: Training Officer's Office** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** The room includes a typical office space and workstation. Observation windows shall be provided to the Computer Training/Testing Room and Department Training Room to monitor and control access.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be directly accessible from the corridor in the Administrative Office area. Shall be adjacent to the Department Training Room and Computer Training/Testing Room with an observation window to each room.
- **OCCUPANTS:** Training Officer.
- **MINIMUM AREA:** 100 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **OBSERVATION WINDOW/FRAME:** Salient characteristics include durability. Glass shall be tinted for privacy.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computer and other office equipment.

## Standard Design Criteria Fire Stations

- **LIGHTING:** Provide per current codes. Provide residential-style fixtures and task lighting at desk.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide one outlet.
  - PA/Audio. Provide speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. Provide data outlets as required by equipment.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 39.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 32. **SPACE: Department Training Room** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** This area is utilized for continuing education and training. It is sized to accommodate the entire on-duty population of the Fire Station.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be directly accessible from the corridor in the Administrative Office area. Shall be adjacent to and have direct access to Training Room Storage room. Shall be adjacent to the Training Officer's Office and Computer Training/Testing Room with an observation window from the Training Officer's Office.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:**  
One Company Headquarters: 420 SF, Net.  
Two Company Headquarters: 700 SF, Net.  
Three Company Headquarters: 980 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Provide independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Providing direct power to each work table.
- **LIGHTING:** Provide per current codes.

## Standard Design Criteria Fire Stations

- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. Provide one outlet.  
PA/Audio. Provide speaker.  
Telephone. Provide one line with internal two-way communication.  
Data. Provide data outlets to every workstation. Provide outlets and data drops for an overhead projector and electric overhead projector screen.  
Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 45.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide overhead retractable screen and overhead projector mount.
- **SPECIAL REQUIREMENTS:** Provide audiovisual capabilities with phone and Internet connections for each training station. Provide retractable overhead screen and overhead projector mount.



## Standard Design Criteria

### Fire Stations

#### 33. **SPACE: Training Room Storage** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** This area is storage for audiovisual equipment, media, and additional equipment and furnishings.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be directly accessible from the Department Training Room.
- **OCCUPANTS:** Training Officer.
- **MINIMUM AREA:** 80 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. None required.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.

**Standard Design Criteria  
Fire Stations**

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 40.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** A minimum of 4 adjustable shelves with heavy duty standards and brackets will be provided. Provide shelves on as many walls of the storage rooms as possible while maintaining adequate circulation space. Shelving shall be able to support 100 pounds per lineal foot.

## Standard Design Criteria

### Fire Stations

#### 34. SPACE: Computer Training/ Testing Room

- **FUNCTIONAL DESCRIPTION:** This area is utilized for Computer Training and Testing consisting of space for carrels for study and testing.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be directly accessible from the corridor in the Administrative Office area. Shall be adjacent to the Training Officer's with an observation window from the Training Officer's Office.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:** 190 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Provide direct power to each computer/study carol and printer.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**  
CCTV. Provide video camera with monitor located in Training Officer's Office.

## Standard Design Criteria

### Fire Stations

CATV/Internal Video. None required.

PA/Audio. Provide speaker.

Telephone. None required.

Data. Provide data outlets to all workstations and equipment.

Security. None required.

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 49.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 35. SPACE: EMS Office (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** The room includes a typical office space and workstation
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be directly accessible from the corridor in the Administrative Office area.
- **OCCUPANTS:** EMS Staff.
- **MINIMUM AREA:** 80 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computer and other office equipment.
- **LIGHTING:** Provide per current codes. Provide residential-style fixtures and task lighting at desk.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide one outlet.
  - PA/Audio. Provide speaker.

## Standard Design Criteria

### Fire Stations

Telephone. Provide one line with internal two-way communication.

Data. Provide data outlets as required by equipment.

Security. None required.

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 39.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria Fire Stations

### 36. **SPACE: HAZMAT/Safety Office** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** The room includes a typical office space and workstation
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station. Shall be directly accessible from the corridor in the Administrative Office area.
- **OCCUPANTS:** HAZMAT/Safety Staff.
- **MINIMUM AREA:** 120 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Multiple electrical and data outlets to be provided to accommodate computer and other office equipment.
- **LIGHTING:** Provide per current codes. Provide residential-style fixtures and task lighting at desk.
- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. Provide one outlet.  
PA/Audio. Provide speaker.

## Standard Design Criteria

### Fire Stations

Telephone. Provide one line with internal two-way communication.

Data. Provide data outlets as required by equipment.

Security. None required.

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 39.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** None.



## Standard Design Criteria

### Fire Stations

#### 37. SPACE: Day/Training Room (Includes Kitchen)

- **FUNCTIONAL DESCRIPTION:** The room shall be configured and furnished like a large residential kitchen/dining/living room. The dining area shall be flexible to accommodate various functions such as informal meetings and group training for the number of companies on duty. Provide means of natural light in the Dining area. Shall have comfortable seating for TV watching, reading, and relaxation in the living room area. Kitchen shall be sized to provide ample room for meal preparation for the entire facility's overnight population. All kitchen appliances shall be light commercial grade. Separate dry and cold food storage shall be provided for each shift.
- **ADJACENCIES:** This area is in the Living Area of the Fire Station. Shall be directly accessible from the corridor in the Living Area.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:**  
One Company: 648 SF, Net.  
Two Company: 1,296 SF, Net.  
Three Company: 1,944 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. In the Living Room area, consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint in the Dining and Living Room areas and semi-gloss industrial latex based paint in the Kitchen area. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP) or gypsum wall board (GWB) with egg-shell paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Provide a set of exterior 3 foot by 7 foot doors, fitted with a locking mechanism and flush panic hardware at the exit. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide two-basin, deep kitchen sink. Provide connections for the dishwashers, coffee and ice makers. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.

## Standard Design Criteria

### Fire Stations

- **HVAC:** Provide per current codes. Provide exhaust hood over kitchen stoves appropriate to the grade of equipment provided.
- **FIRE PROTECTION:** Provide per current codes. Refer to NFPA 96 to confirm fire protection requirements for the grade of kitchen equipment provided. Provide carbon monoxide and smoke detectors.
- **ELECTRICAL:** Provide outlets per current codes and to accommodate all kitchen equipment. Provide dedicated circuits as necessary to minimize power interruptions.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with incandescent energy efficient light fixtures. Consider residential-style lighting fixtures. Consider providing dimmers for all light fixtures.
- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. Provide at least one outlet in the Day Room area.  
PA/Audio. Provide speaker.  
Telephone. Provide one line with internal two-way communication.  
Data. Provide at least one outlet in the dining/training area. Consider providing outlets in the living room area. In Satellite stations, provide outlets and data drops for an overhead projector and electric overhead projector screen.  
Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 45.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide base and wall cabinets with 24-in. deep solid surface work counter. Provide a minimum of two separate dry storage closets or pantries (one for each of two shifts).
- **SPECIAL REQUIREMENTS:**  
 Kitchen area: Provide space for a large-capacity dishwasher, stove/range, exhaust hood, and free-standing ice maker. Provide space for a minimum of two separate refrigerators with freezers (one for each of two shifts), microwave oven, commercial-grade coffee maker, and toaster oven. All equipment shall be commercial grade.  
  
 Dining/Training area: Provide space for dining table with chairs. In the Satellite stations, provide retractable overhead screen and overhead projector mount.  
  
 Living Room area: Provide space for recliner armchairs, side tables, entertainment center, large-screen TV, VCR, and DVD player. Consider providing space for bookshelves and coffee table(s).

## Standard Design Criteria

### Fire Stations

#### 38. SPACE: Dorm Rooms

- **FUNCTIONAL DESCRIPTION:** The rooms are the private quarters of the firefighters and are used for sleeping during 24-hour shifts. The room is shared between two firefighters of different crews/shifts so that the room is never occupied simultaneously. Shall provide space for individual wardrobes for each firefighter. Shall provide space for a two-bed arrangement, giving each firefighter an individual bed and nightstand. The Dorm Rooms should be a comfortable, inviting space that promotes relaxation. Acoustical privacy between rooms is important. Provide means of natural light in every room.
- **ADJACENCIES:** This area is in the Living Area of the Fire Station. Shall be directly accessible from the private corridor in the Living Area.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:** One Dorm Room: 140 SF, Net.  
One Company- 5 Dorm Rooms: 700 SF, Net.  
Two Company- 10 Dorm Rooms: 1,400 SF, Net.  
Three Company- 15 Dorm Rooms: 2,100 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide gypsum wall board (GWB) with egg-shell latex paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Providing independent thermostat for each Dorm Room.
- **FIRE PROTECTION:** Provide per current codes. Provide carbon monoxide and smoke detectors.

## Standard Design Criteria Fire Stations

- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes. In addition to the ambient and task lighting fixtures, provide a dedicated alert light fixture that is controllable from the Watch Desk/Dispatch and tied into the firefighting alert system with a red-tinted bulb or lens.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide one outlet.
  - PA/Audio. Provide speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. Provide a data outlet.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** Provide space for extra-long twin bed, night table, two wardrobes, desk and desk chair, desk light, and alarm clock.

## Standard Design Criteria

### Fire Stations

#### 39. SPACE: Men Bathroom>Showers/Changing

- **FUNCTIONAL DESCRIPTION:** This area shall contain private water closets, lavatory and shower stalls with private changing areas for firefighters.
- 
- **ADJACENCIES:** This area is in the Living Area of the Fire Station. Shall be directly accessible from the corridor in the Living Area.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:**  
One Company: 250 SF, Net.  
Two Company: 325 SF, Net.  
Three Company: 350 SF, Net.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide slip resistant ceramic tile. Floors shall be able to withstand the warm humid environment and shall be able to keep water from getting under the flooring material. Salient characteristics include durable and easy to clean, repairable, easy to maintain, and slip resistant. A base material, appropriate for the flooring material used, is required. Base shall be sealed to the flooring.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide moisture and mildew resistant gypsum wall board. Provide a full-height hard tile finish on all walls that is impervious to water and shall be able to withstand daily sanitizing. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE.** Provide skim-coated cementitious backer board ceiling. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide shower stalls, lavatories, and water closets. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design. Provide a hot water hose bibb under sink area to assist in disinfection.  
One-Company Station: Provide 2 water closets, 2 showers, and 2 lavatories.  
Two-Company Station: Provide 4 water closets, 4 showers, and 3 lavatories.  
Three-Company Station: Provide 4 water closets, 4 showers, and 4 lavatories.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.

## Standard Design Criteria Fire Stations

- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Speaker required.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide 24-in deep minimum solid surface materials for countertops. Provide 24-in deep minimum resin based materials for showers, urinals, and toilet partitions.
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 40. SPACE: Women Bathroom/Showers/Changing

- **FUNCTIONAL DESCRIPTION:** This area shall contain private water closets, lavatory and shower stalls with private changing areas for firefighters.
- 
- **ADJACENCIES:** This area is in the Living Area of the Fire Station. Shall be directly accessible from the corridor in the Living Area.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:**  
All Fire Stations: 150 SF, Net.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide slip resistant ceramic tile. Floors shall be able to withstand the warm humid environment and shall be able to keep water from getting under the flooring material. Salient characteristics include durable and easy to clean, repairable, easy to maintain, and slip resistant. A base material, appropriate for the flooring material used, is required. Base shall be sealed to the flooring.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide moisture and mildew resistant gypsum wall board. Provide a full-height hard tile finish on all walls that is impervious to water and shall be able to withstand daily sanitizing. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE.** Provide skim-coated cementitious backer board ceiling. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide shower stalls, lavatories, and water closets. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design. Provide a hot water hose bibb under sink area to assist in disinfection.  
All Fire Stations: Provide 1 water closet, 1 shower, and 1 lavatory.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**  
CCTV. None required.

## Standard Design Criteria Fire Stations

CATV/Internal Video. None required.

PA/Audio. Speaker required.

Telephone. None required.

Data. None required.

Security. None required.

- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide 24-in deep minimum solid surface materials for countertops. Provide 24-in deep minimum resin based materials for showers and toilet partitions.
- **SPECIAL REQUIREMENTS:** None.



## Standard Design Criteria

### Fire Stations

#### 41. SPACE: Fitness Room

- **FUNCTIONAL DESCRIPTION:** The room shall accommodate fitness machines, treadmill, stationary bicycle, elliptical machine, free weights and mats. Room shall be sized to provide free circulation.
- **ADJACENCIES:** This area is in the Living Area of the Fire Station. Shall be directly accessible from the corridor in the Living Area and shall be adjacent to, or in the proximity of, the Bathroom/Showers/Changing area.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:** 437 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider a cork, sports, or rubberized flooring system. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide moisture resistant acoustical ceiling panels (ACP) or gypsum wall board (GWB) with egg-shell paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass and shall be provided with a minimum 24" wide sidelite. Doors shall be provided with self-closing device.
- **OBSERVATION WINDOW/FRAME:** Salient characteristics include durability.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. In addition, provide 68 F (20 C) minimum, 74 F (23 C) maximum, less than 60% relative humidity, 20 cfm/person outside air and use CO2 sensors to control outside air. Provide multi-speed ceiling fans.
- **FIRE PROTECTION:** Provide per current codes. Provide carbon monoxide and smoke detectors.
- **ELECTRICAL:** Provide outlets per current codes and provide wall or floor outlets to accommodate fitness machines such as treadmills, bikes, and stair-step machines.

## Standard Design Criteria Fire Stations

- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide at least one outlet in for wall mounted unit.
  - PA/Audio. Provide speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide full-wall-height mirrors on at least one wall.
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 42. **SPACE: Additional Toilet/Shower** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** This area shall be lavatory, water closet, and shower area for Fire Station staff.
- **ADJACENCIES:** This area is in the Living Area of the Fire Station. Shall be directly accessible from the corridor in the Living Area.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:** 60 SF, Net.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Floors shall be able to withstand the warm humid environment and shall be able to keep water from getting under the flooring material. Salient characteristics include durable and easy to clean, repairable, easy to maintain, and slip resistant. A base material, appropriate for the flooring material used, is required. Base shall be sealed to the flooring.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Providing moisture and mildew resistant gypsum wall board. Provide a low-maintenance finish such as egg-shell latex paint. On all walls, a minimum 48" tall wainscot is required that is impervious to water and be able to withstand daily sanitizing. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide moisture resistant gypsum board ceiling. Consider semi-gloss industrial paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide water closet, shower, and lavatory. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** Provide per current codes. Local exhaust vent above toilet.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. None required.
  - Telephone. None required.

## **Standard Design Criteria Fire Stations**

Data. None required.

Security. None required.

- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide 24-in deep minimum solid surface materials for countertops. Provide 24-in deep minimum resin based materials for shower.
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 43. SPACE: Laundry Room

- **FUNCTIONAL DESCRIPTION:** This room shall accommodate large heavy duty commercial washers and dryers, built-in laundry-folding table and wall-mounted drying rack for the firefighters' personal use.
- **ADJACENCIES:** This area is in the Living Areas of the Fire Station. Shall be directly accessible from the corridor in the Living areas.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:**  
One Company: 80 SF, Net.  
Two Company: 160 SF, Net.  
Three Company: 240 SF, Net.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Floors shall be able to withstand the warm humid environment and shall be able to keep water from getting under the flooring material. Salient characteristics include durable and easy to clean, repairable, easy to maintain, and slip resistant. A base material, appropriate for the flooring material used, is required. Base shall be sealed to the flooring.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Providing moisture and mildew resistant gypsum wall board. Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide moisture resistant acoustical ceiling panels (ACP) or moisture resistant gypsum wall board (GWB) with semi-gloss latex paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide water supply and drain to each washer. Provide a deep laundry sink. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Provide an additional outlet at the folding table.

## Standard Design Criteria Fire Stations

- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide a speaker.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide a built-in laundry-folding table and wall-mounted drying rack.
- **SPECIAL REQUIREMENTS:** Dryer vents shall be individually and directly vented to the outside. A booster fan will be provided in the dryer vent when the travel distance exceeds 20 feet to the exterior.

## Standard Design Criteria

### Fire Stations

#### 44. SPACE: Janitor's Closet

- **FUNCTIONAL DESCRIPTION:** This room shall be utilized to store janitor's equipment and cleaning supplies.
- **ADJACENCIES:** This area is in the Living Area of the Fire Station. Shall be directly accessible from the corridor in the Living Area and shall be adjacent to, or in the proximity of, the Bathroom/Shower/Changing area. A Janitor's Room shall be provided on the first floor of a Two-Story Fire Station directly accessible from the Administrative Area's corridor also.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:**  
One-Story Fire Station: 48 SF, Net.  
Two-Story Fire Station: 48 SF, Net- First Floor and 48 SF, Net- Second Floor
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Floors shall be able to keep water from getting under the flooring material. Salient characteristics include durable and easy to clean, repairable, easy to maintain, and slip resistant. A base material, appropriate for the flooring material used, is required. Base shall be sealed to the flooring.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Providing moisture and mildew resistant gypsum wall board. Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide moisture resistant acoustical ceiling panels (ACP) or gypsum wall board (GWB) with semi-gloss latex paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **PLUMBING:** A utility (mop) sink is required. A floor drain is required in this area that shall be self priming, or designed to prevent sewer gases from entering the occupied space by a proven and maintenance-free design.
- **HVAC:** Provide per current codes. Local exhaust vent required.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes.

## Standard Design Criteria Fire Stations

- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. None required.  
PA/Audio. None required.  
Telephone. None required.  
Data. None required.  
Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 45.
- **CASEWORKS/BUILT-IN EQUIPMENT:** Adjustable with heavy duty standards and brackets shelves will be provided on at least one wall. Shelves shall be able to support 100 pounds per lineal foot.
- **SPECIAL REQUIREMENTS:** None.



## Standard Design Criteria

### Fire Stations

#### 45. **SPACE: Recreation Room** (Headquarters Fire Stations only).

- **FUNCTIONAL DESCRIPTION:** This area accommodates up to two "game units", such as pool tables, foosball tables, ping pong tables or video game consoles. Provide some acoustical separation from the Day/Training Room and the Dorm Rooms.
- **ADJACENCIES:** This area is in the Living Area of the Fire Station. Shall be directly accessible from the corridor in the Living Area and shall be adjacent to, or in the proximity of, the Day/Training Room.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:** 420 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP) or gypsum wall board (GWB) with egg-shell paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be a minimum of half-height glass. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes. Consider providing independent thermostat.
- **FIRE PROTECTION:** Provide per current codes. Provide carbon monoxide and smoke detectors.
- **ELECTRICAL:** Provide outlets per current codes. Provide power required to accommodate any game equipment.
- **LIGHTING:** Provide per current codes. Provide 50 ft. candles (540 Lux) with incandescent energy efficient light fixtures. Consider residential-style lighting fixtures. Consider providing dimmer for all light fixtures.

## Standard Design Criteria Fire Stations

- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. Provide at least one outlet. Consider height of outlet for a wall mounted television.
  - PA/Audio. Provide speaker.
  - Telephone. Provide one line with internal two-way communication.
  - Data. None required.
  - Security. None required.
- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 52.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria Fire Stations

### 46. SPACE: Corridor

- **FUNCTIONAL DESCRIPTION:** Main Circulation Space.
- **ADJACENCIES:** Through Fire Station.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:**  
One-Story Fire Station: Portion of Net-To-Gross Ratio= 22%.  
Two-Story Fire Station: Portion of Net-To-Gross Ratio= 30%.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. Consider providing vinyl wall coverings.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP) or gypsum wall board (GWB) with egg-shell paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Provide 3 foot by 7 foot doors, fitted with a locking mechanism and flush panic hardware at the entry/exits. Provide doors, fitted with passage hardware at the transitions doors. To ensure visibility, doors shall have vision panels. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide water for electric water coolers.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes. Consider outlets for display cases.
- **LIGHTING:** Provide per current codes. Provide 20 ft. candles (215 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**  
CCTV. Provide at least one outlet.  
CATV/Internal Video. None required.  
PA/Audio. Provide speaker.

## Standard Design Criteria Fire Stations

Telephone. None required

Data. None required.

Security. None required.

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 45.
- 
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** Corridor SHALL have a minimum clear width of NO LESS THAN 5'-0" in the Living Area. Corridor SHALL have a minimum clear width of NO LESS THAN 6'-0" in the Administration and Training areas. An ABA compliant bi-level electric water cooler shall be provided in the Administration and Training areas. An electric water cooler shall be provided in the Living Area.

## Standard Design Criteria Fire Stations

### 47. SPACE: Vending

- **FUNCTIONAL DESCRIPTION:** This area accommodates for two or more vending machines for snacks and drinks.
- **ADJACENCIES:** One location off of Corridor. Can be located in the Recreation Room.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:** 40 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. Consider providing vinyl wall coverings.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP) or gypsum wall board (GWB) with egg-shell paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Provide 3 foot by 7 foot doors, fitted with a locking mechanism and flush panic hardware at the entry/exits. Provide doors, fitted with passage hardware at the transitions doors. To ensure visibility, doors shall have vision panels. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes. Provide outlets and power required by vending machines.
- **LIGHTING:** Provide per current codes. Provide 20 ft. candles (215 Lux) with fluorescent energy efficient light fixtures.
- **COMMUNICATION:**
  - CCTV. Provide at least one outlet.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide speakers and horns with visual element.

## **Standard Design Criteria Fire Stations**

Telephone. None required.

Data. None required.

Security. None required.

- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:** None

## Standard Design Criteria

### Fire Stations

#### 48. **SPACE: Emergency Operations Center** (Installation Requirement Only).

- **FUNCTIONAL DESCRIPTION:** This area, as dictated by Installation mission requirements is a specialized conference room used in cases of major operations to manage and coordinate rescue and emergency service efforts. It should be set up to handle planned and ad-hoc meetings and a high volume of telephone and computer communications.
- **ADJACENCIES:** Locate EOC Situation Room in an interior area of the building, adjacent to the Dispatch. Classified information may be accessed in this room.
- **OCCUPANTS:** EOC Staff.
- **MINIMUM AREA:** Per Room: 320 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Consider providing durable commercial carpeting. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. Consider providing vinyl wall coverings.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Provide doors, fitted with a locking mechanism and flush panic hardware at the entry/exit. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes and to support all equipment.
- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**  
CCTV. Provide outlets required to support equipment.

## Standard Design Criteria

### Fire Stations

CATV/Internal Video. Provide outlets required to support equipment.

PA/Audio. Provide a speaker and a microphone.

Telephone. Provide regular and secure multi-telephone line required to support telephone and fax.

Data. Provide regular and secure data outlets to support required equipment.

Security. None required.

- **ACOUSTICS:** Provide partition and door construction with a minimum STC rating of 49.
- 
- **CASEWORKS/BUILT-IN EQUIPMENT:** Provide a retractable projector screen and overhead projector mount. Consider providing built-in case work such as a counter and base cabinets.
- **SPECIAL REQUIREMENTS:** If classified information at SECRET level shall be accessed in this room, address security, visibility, and data handling issues in accordance with the USAISEC Technical Guide for the Integration of SIPRNET and AR 380-5.



## Standard Design Criteria

### Fire Stations

#### 49. SPACE: Recycle Room/Space

- **FUNCTIONAL DESCRIPTION:** An accessible area that serves the entire building and is dedicated to the collection and storage of non-hazardous materials for recycling, including at a minimum: paper, corrugated cardboard, glass, plastics, and metals.
- **ADJACENCIES:** Shall be directly accessible from the corridor of the Fire Station.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:** 20 SF, Net.
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide low maintenance sheet or tile vinyl flooring material. Salient characteristics include durable and easy to clean, repairable, and easy to maintain. A base material, appropriate for the flooring material used, is required.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include durable and easy to clean, repairable, and easy to maintain.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide acoustical ceiling panels (ACP) or gypsum wall board (GWB) with egg-shell paint. Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Shall be fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes. Provide a smoke detector.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. Provide speaker.
  - Telephone. None required.
  - Data. None required.
  - Security. None required.

## **Standard Design Criteria Fire Stations**

- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** The Recycle Room/Space only has to be a space. It can be allocated within another Fire Station's room.

## Standard Design Criteria Fire Stations

### 50. SPACE: Mechanical Room

- **FUNCTIONAL DESCRIPTION:** This area supports the Fire Station's mechanical functions.
- **ADJACENCIES:** Shall be directly accessible from the service drive.
- **OCCUPANTS:** Fire Station's mechanical equipment.
- **MINIMUM AREA:**  
One-Story Fire Station: Portion of Net-To-Gross Ratio= 22%.  
Two-Story Fire Station: Portion of Net-To-Gross Ratio= 30%.
- **CEILING HEIGHT:** Provide per current codes.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide per current codes.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide per current codes.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE** Provide per current codes.
- **DOORS/FRAME:** Salient characteristics include durability. Provide a set of double 3 foot by 7 foot doors, fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors, frames, and hardware shall be able to withstand constant opening and closing. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide per current codes.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. None required.  
PA/Audio. None required.  
Telephone. None required.  
Data. None required.  
Security. None required.
- **ACOUSTICS:** Provide per current codes.

**Standard Design Criteria  
Fire Stations**

- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** Provide per current codes.

## Standard Design Criteria Fire Stations

### 51. SPACE: Electrical Room

- **FUNCTIONAL DESCRIPTION:** This area supports the Fire Station's electrical functions.
- **ADJACENCIES:** Shall be directly accessible from the service drive.
- **OCCUPANTS:** Fire Station's electrical equipment.
- **MINIMUM AREA:**  
One-Story Fire Station: Portion of Net-To-Gross Ratio= 22%.  
Two-Story Fire Station: Portion of Net-To-Gross Ratio= 30%.
- **CEILING HEIGHT:** Provide per current codes.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Provide per current codes.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide per current codes.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE** Provide per current codes.
- **DOORS/FRAME:** Salient characteristics include durability. Provide a 3 foot by 7 foot door, fitted with a locking mechanism and lever type handle that allows the door to be opened from the inside while locked. Doors, frames, and hardware shall be able to withstand constant opening and closing. Doors shall be provided with self-closing device.
- **PLUMBING:** Provide per current codes.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. None required.  
PA/Audio. None required.  
Telephone. None required.  
Data. None required.  
Security. None required.
- **ACOUSTICS:** Provide per current codes.

**Standard Design Criteria  
Fire Stations**

- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** Provide per current codes.

## Standard Design Criteria Fire Stations

### 52. SPACE: Patio

- **FUNCTIONAL DESCRIPTION:** This area shall be provided for firefighters to relax and grill.
- **ADJACENCIES:** Shall be adjacent to and with direct access to the Dayroom/Training Room.
- **OCCUPANTS:** Fire Station Staff.
- **MINIMUM AREA:**  
One or Two Company Fire Station: 150 SF, Net.  
Three Company Fire Station: 250 SF, Net.
- **CEILING HEIGHT:** None.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:**  
Concrete. Consider brick or stone paver accents.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** None.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE** None. Consider providing shade structures.
- **DOORS/FRAME:** None.
- **PLUMBING:** Provide per current codes. Provide hose bibb and if natural gas is available provide a gas connection for an external grill.
- **HVAC:** None.
- **FIRE PROTECTION:** None. If an attached awning is provided, refer to NFPA 13 for the requirements.
- **ELECTRICAL:** Provide exterior outlets per current codes. Provide minimum of four weatherproof GFCI outlets.
- **LIGHTING:** Provide per current codes. Provide .5 ft. candles (11 Lux) with energy efficient outdoor light fixtures.
- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. None required.  
PA/Audio. Provide a speaker.  
Telephone. None required.  
Data. None required.  
Security. None required.
- **ACOUSTICS** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.

**Standard Design Criteria  
Fire Stations**

- **SPECIAL REQUIREMENTS:** None.



## Standard Design Criteria Fire Stations

### 53. SPACE: Canopy

- **FUNCTIONAL DESCRIPTION:** This area shall be provided for weather protection at the main entrance to the Fire Station
- **ADJACENCIES:** Shall be directly off of the Lobby entrance of the Fire Station.
- **OCCUPANTS:** Fire Station Staff.  
  
**MINIMUM AREA:** 40 SF, Net. (Half of 80 SF, per US Army Technical Instructions 800-01 (TI 800-01), Design Criteria).
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Concrete. Consider brick or stone paver accents.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** None.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Salient characteristics include durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** None.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes.
- **COMMUNICATION:**  
CCTV. None required.  
CATV/Internal Video. None required.  
PA/Audio. Provide speaker.  
Telephone. None required.  
Data. None required.  
Security. None required.
- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None.
- **SPECIAL REQUIREMENTS:** None.

## Standard Design Criteria

### Fire Stations

#### 54. **SPACE: Vestibule** (As required by geographical location, in lieu of the Canopy).

- **FUNCTIONAL DESCRIPTION:** This area serves as the entrance/exit to the facility. The Vestibule should be recognizable from the outside as a well-lit, inviting space.
- **ADJACENCIES:** This area is in the Administrative Office area of the Fire Station and is the main entrance into the Fire Station.
- **OCCUPANTS:** Fire Station Visitors.
- **MINIMUM AREA:** Each: 80 SF, Net
- **CEILING HEIGHT:** 8 ft. minimum.
- **MINIMUM FLOOR and BASE CONSTRUCTION/SURFACE PERFORMANCE:** Salient characteristics include easy to clean, maintain, and repair. A base material, appropriate for the flooring material used, is required. Consider stone or quarry tile with stone or tile base.
- **MINIMUM WALL CONSTRUCTION/SURFACE PERFORMANCE:** Provide a low-maintenance finish such as egg-shell latex paint. Salient characteristics include easy to repair, easy to maintain, and durable. Consider providing vinyl wall coverings.
- **MINIMUM CEILING CONSTRUCTION/SURFACE PERFORMANCE:** Provide decorative acoustical ceiling panels (ACP). Salient characteristics include ease of accessibility to mechanical system above ceiling, durable, and shall provide an aesthetically pleasing surface, free of sags or other defects.
- **DOORS/FRAME:** Salient characteristics include durability. Doors, frames, and hardware shall be able to withstand constant opening and closing. Provide a set of storefront double 3 foot by 7 foot doors, fitted with a locking mechanism and flush panic hardware at the entry. To ensure maximum visibility, doors shall be fully glazed. Doors shall be provided with self-closing device.
- **PLUMBING:** None.
- **HVAC:** Provide per current codes.
- **FIRE PROTECTION:** Provide per current codes.
- **ELECTRICAL:** Provide outlets per current codes.
- **LIGHTING:** Provide per current codes. Consider decorative lighting fixtures and task lighting.
- **COMMUNICATION:**
  - CCTV. None required.
  - CATV/Internal Video. None required.
  - PA/Audio. None required.
  - Telephone. None required.
  - Data. None required.

## **Standard Design Criteria Fire Stations**

Security. None required.

- **ACOUSTICS:** None.
- **CASEWORKS/BUILT-IN EQUIPMENT:** None
- **SPECIAL REQUIREMENTS:**  
Provide airlock at main entrance when necessary.  
  
Consider a recessed, built-in mat at entry.

**Standard Design Criteria  
Fire Stations****55. SPACE: Site/Building Exterior**

- The layout of the parking lot and traffic circulation must consider the safety of the Fire Station staff and visitors when entering and departing the facility. Access drives to staff and public parking should not cross the vehicle access drive out of the Apparatus Bay. If the parking lot design requires crosswalks, as a minimum, these must be painted and identifiable with signage in appropriate locations to ensure the safety of the personnel and visitors.
- Provide parking for authorized Fire Station staff. Parking area shall be sized to accommodate two shifts. Visitor parking shall be separate from staff parking.
- All sidewalks must be ABA compliant.



**US Army Corps  
of Engineers**

# SATELLITE FIRE STATION SPACE PROGRAM DATA

	ONE COMPANY SATELLITE FIRESTATION		TWO COMPANY SATELLITE FIRESTATION		THREE COMPANY SATELLITE FIRESTATION	
Functional Component	NEW ARMY DESIGN STANDARD SQ. FT.	REQUIRED STANDARD SQ. FT.	NEW ARMY DESIGN STANDARD SQ. FT.	REQUIRED STANDARD SQ. FT.	NEW ARMY DESIGN STANDARD SQ. FT.	REQUIRED STANDARD SQ. FT.
Apparatus Bay (Varies by Installation)	4,095	4,095	5,642	5,642	5,642	5,642
Apparatus Equipment and Maintenance						
Station Captain's Suite	---	---	---	---	---	---
Station Captain's Dorm Room	---	---	---	---	---	---
Personal Protection Equip. (PPE) Stor.	In Apparatus Bay	200	In Apparatus Bay	300	In Apparatus Bay	400
Hose Storage	In Apparatus Bay	54	In Apparatus Bay	54	In Apparatus Bay	54
SCBA Maintenance Room	161	144	161	144	252	144
SCBA Compressor Room	61	50	61	50	61	50
Protective Clothing Laundry	200	100	200	100	200	150
Equipment Wash/ Disinfection	173	150	173	150	173	150
Work Room/ Equipment Maintenance	153	120	153	120	153	120
EMT Storage (incl. Lockable Med. Cabinet)	25	25	25	25	25	25
HAZMAT/ CBRNE Equipment Stor.	---	---	---	---	---	---
Logistics' Office	---	---	---	---	---	---
Fire Extinguisher Inspection (Flight Line/Non Flight Line)	243	160	243	160	243	160
Sum of Apparatus Equip.t and Maint. (Net)	1016	1003	1016	1103	1107	1253
Administration and Training						
Fire Chief's Suite	---	---	---	---	---	---
Fire Chief's Dorm Room	---	---	---	---	---	---
Fire Chief's Toilet	---	---	---	---	---	---
Chief's Conference Room	---	---	---	---	---	---
Deputy Chief's Office	---	---	---	---	---	---
Station's Officer's Office/Watch Desk	234	230	234	230	234	230
Assistant Chief/ Shift Supervisor's Suite	---	---	---	---	---	---
Assistant Chief/ Shift Supervisor's Dorm Room	---	---	---	---	---	---
Assistant Chief/ Shift Supervisor's Toilet	---	---	---	---	---	---
General Administration Storage	129	80	129	80	129	80
Lobby	137	100	137	100	137	100
Public ABA Toilet	72	48	72	48	72	48
Dispatch Suite	---	---	---	---	---	---
Dispatch Toilet	---	---	---	---	---	---
Dispatch Kitchenette	---	---	---	---	---	---
Information Technology/ (IT) room	48	60	48	60	48	60
Telecommunication Room	130	180	130	180	130	180
Assistant Chief of Fire Protection's Office	---	---	---	---	---	---
Inspector(s)' Office	---	---	---	---	---	---
Training Officer's Office	---	---	---	---	---	---
Department Training Room	---	---	---	---	---	---
Training Room Storage	---	---	---	---	---	---
Computer Training/ Testing Room	248	190	248	190	248	190
EMS Office	---	---	---	---	---	---
HAZMAT/ Safety Office	---	---	---	---	---	---
Recycle Room/Space	140	20	180	20	120	20
Canopy- Half Square Footage	40	40	40	40	40	40
Sum of Apparatus Equip.t and Maint. (Net)	1178	948	1218	948	1158	948
Living Area						
Day/ Training Room	912	648	1,296	1,296	1,956	1,944
Dormitory Rooms	700	700	1,400	1,400	2,100	2,100
Men Bathrooms/Showers/Changing	226	250	344	325	344	350
Women Bathrooms/Showers/Changing	168	150	169	150	169	150
Fitness Room	510	437	510	437	446	437
Additional Toilet/Shower	---	---	---	---	236	60
Laundry Room	138	80	138	160	200	240
Janitor's Closet	57	48	57	48	57	48
Recreation Room	---	---	---	---	---	---
Vending	25	40	50	40	50	40
Sum of Apparatus Equip.t and Maint. (Net)	2,736	2353	3,964	3,856	5,558	5,369
Total Sq. Ft. of all spaces without the Apparatus Bay (Net)						
	4,930	4304	6,198	5,907	7,823	7,570
Total Sq. Ft. of all spaces with the Apparatus Bay (Net)						
	9,025	8,399	11,840	11,549	13,465	13,212
Net To Gross Factor (22%)						
		0.22		0.22		0.22
Mechanical Room	320		457		594	
Electrical Room	143		144		167	
Circulation and Wall Thickness	1,983		2,502		3,192	
Sum of Net to Gross Factor	2446	1847.78	3103	2540.78	3953	2906.64
Other Spaces						
Staff Parking	26	---	31	---	36	---
Visitor Parking	Per Code and ABA	Per Code and ABA	Per Code and ABA	Per Code and ABA	Per Code and ABA	Per Code and ABA
Bike Rack Area	160 Sq. Ft. per 10-Bike Rack	160 Sq. Ft. per 10-Bike Rack	160 Sq. Ft. per 10-Bike Rack	160 Sq. Ft. per 10-Bike Rack	160 Sq. Ft. per 10-Bike Rack	160 Sq. Ft. per 10-Bike Rack
Site Approach to Apparatus Bays	2000 Sq. Ft. per Bay	2000 Sq. Ft. per Bay	2000 Sq. Ft. per Bay	2000 Sq. Ft. per Bay	2000 Sq. Ft. per Bay	2000 Sq. Ft. per Bay
Fire Fighting Agent Storage (ARFF)	75 Sq. Ft. per ARFF truck	75 Sq. Ft. per ARFF truck	75 Sq. Ft. per ARFF truck	75 Sq. Ft. per ARFF truck	75 Sq. Ft. per ARFF truck	75 Sq. Ft. per ARFF truck
Fire Fighting Agent Storage (Structural)	48 Sq. Ft. per Station (Struct. Trucks)	48 Sq. Ft. per Station (Struct. Trucks)	48 Sq. Ft. per Station (Struct. Trucks)	48 Sq. Ft. per Station (Struct. Trucks)	48 Sq. Ft. per Station (Struct. Trucks)	48 Sq. Ft. per Station (Struct. Trucks)
Patio	Min. 15 Sq. Ft Per Person	Min. 15 Sq. Ft Per Person	Min. 15 Sq. Ft Per Person	Min. 15 Sq. Ft Per Person	Min. 15 Sq. Ft Per Person	Min. 15 Sq. Ft Per Person
Fire Extinguisher Inspection (Non Flight Line/Flight Line) Stor.	40 Sq. Ft. per Station	40 Sq. Ft. per Station	40 Sq. Ft. per Station	40 Sq. Ft. per Station	40 Sq. Ft. per Station	40 Sq. Ft. per Station
Additional Structural Bay	17 ft. WX 91 ft. L (1,547 SF) net.	17 ft. WX 91 ft. L (1,547 SF) net.	17 ft. WX 91 ft. L (1,547 SF) net.	17 ft. WX 91 ft. L (1,547 SF) net.	17 ft. WX 91 ft. L (1,547 SF) net.	17 ft. WX 91 ft. L (1,547 SF) net.
Additional ARFF Bay	20 ft. WX 91 ft. L (1,820 SF) net.	20 ft. WX 91 ft. L (1,820 SF) net.	20 ft. WX 91 ft. L (1,820 SF) net.	20 ft. WX 91 ft. L (1,820 SF) net.	20 ft. WX 91 ft. L (1,820 SF) net.	20 ft. WX 91 ft. L (1,820 SF) net.
Emergency Operations Center (EOC)	---	---	---	---	---	---
Total Sq. Ft. (Gross)						
	11,471	10,247	14,943	14,090	17,418	16,119

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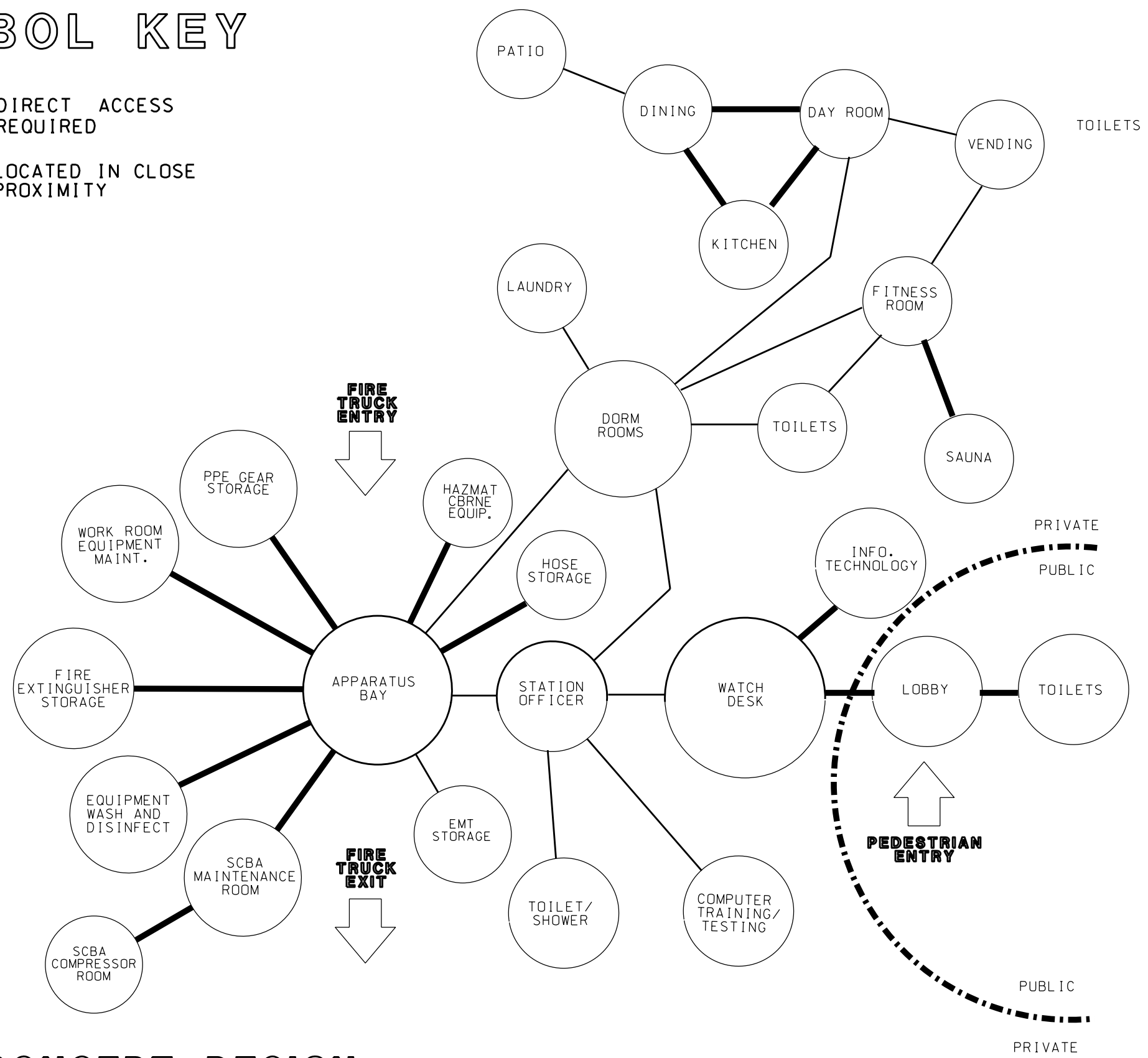
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# FOR SATELLITE FIRE STATION

Sheet  
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number:  
**A1-SC**  
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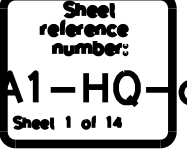


\_\_\_\_\_ DIRECT ACCESS  
 REQUIRED  
  
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 PROXIMITY



# CONCEPT DESIGN

## SATELLITE FIRE STATION



Friday, September 07, 2012

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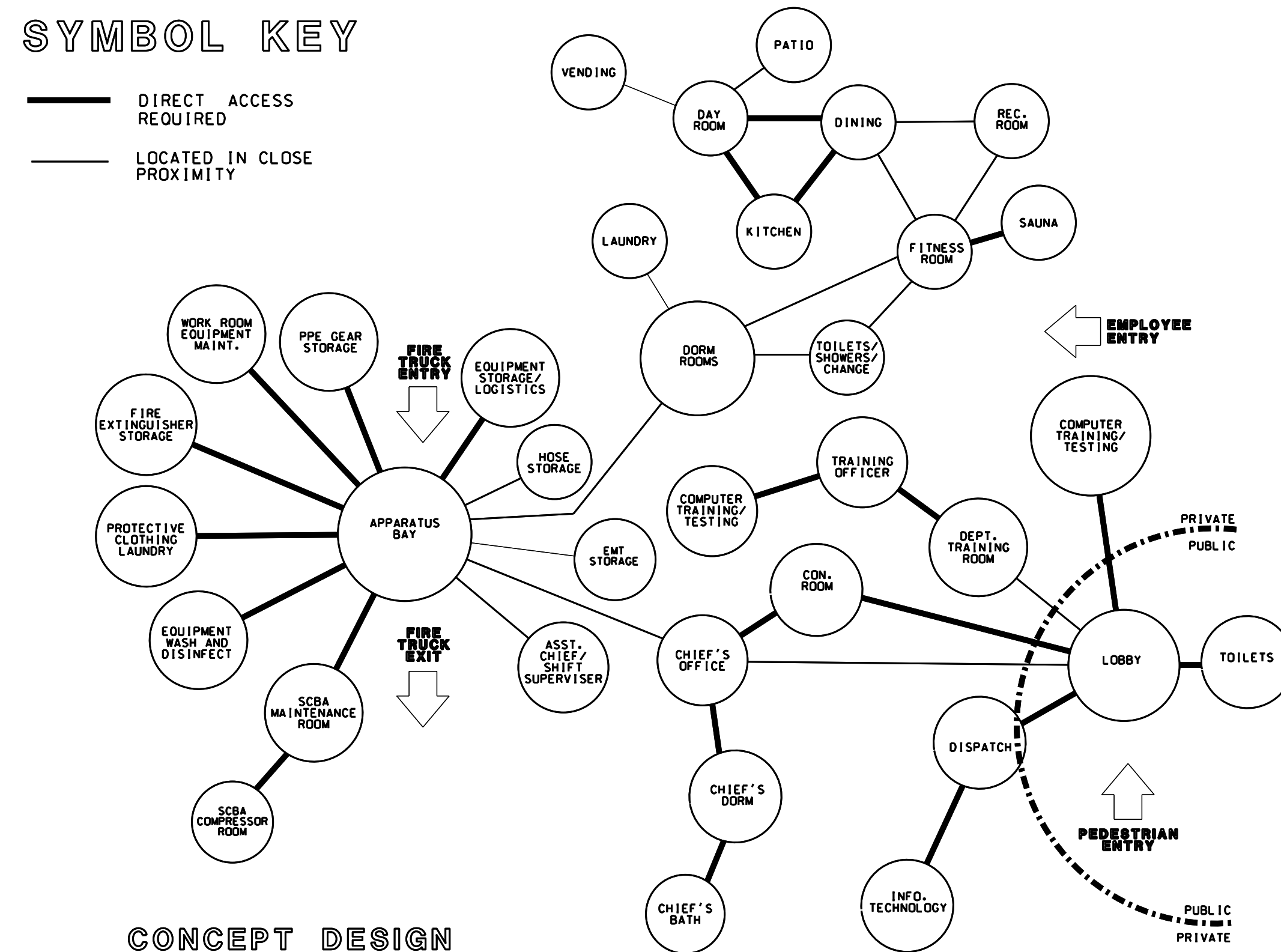
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	Submitted by:	CE HMC-ED-SC-A	File name:			
			Print date:	30 Jan 2009		

DA FACILITIES STANDARDIZATION PROGRAM  
ARMY FIRE STATION DESIGN GUIDE  
FOR  
HEADQUARTERS FIRE STATION

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## SYMBOL KEY



# CONCEPT DESIGN

## HEADQUARTER FIRE STATION

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	Drawn by: ARCH BRO-Durflinger	Design file no.	
	Reviewed by: CE HMC-ED-SC-A	Drawing code	
	Submitted by: CE HMC-ED-SC-A	File name: Proj code: 30 JUN 2009	

**FOR  
ARMY HEADQUARTERS FIRE STATION  
FACILITIES STANDARDIZATION PROGRAM  
ARMY FIRE STATION DESIGN GUIDE**

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reference  
number:  
**A2-HQ**  
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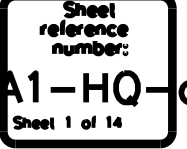
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PORT CENTER, HUNTSVILLE  
HUNTSVILLE, ALABAMA**

**FACILITIES STANDARDIZATION PROGRAM**  
**ARMY FIRE STATION DESIGN GUIDE**

## HEADQUARTERS FIRE STATION

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number:**

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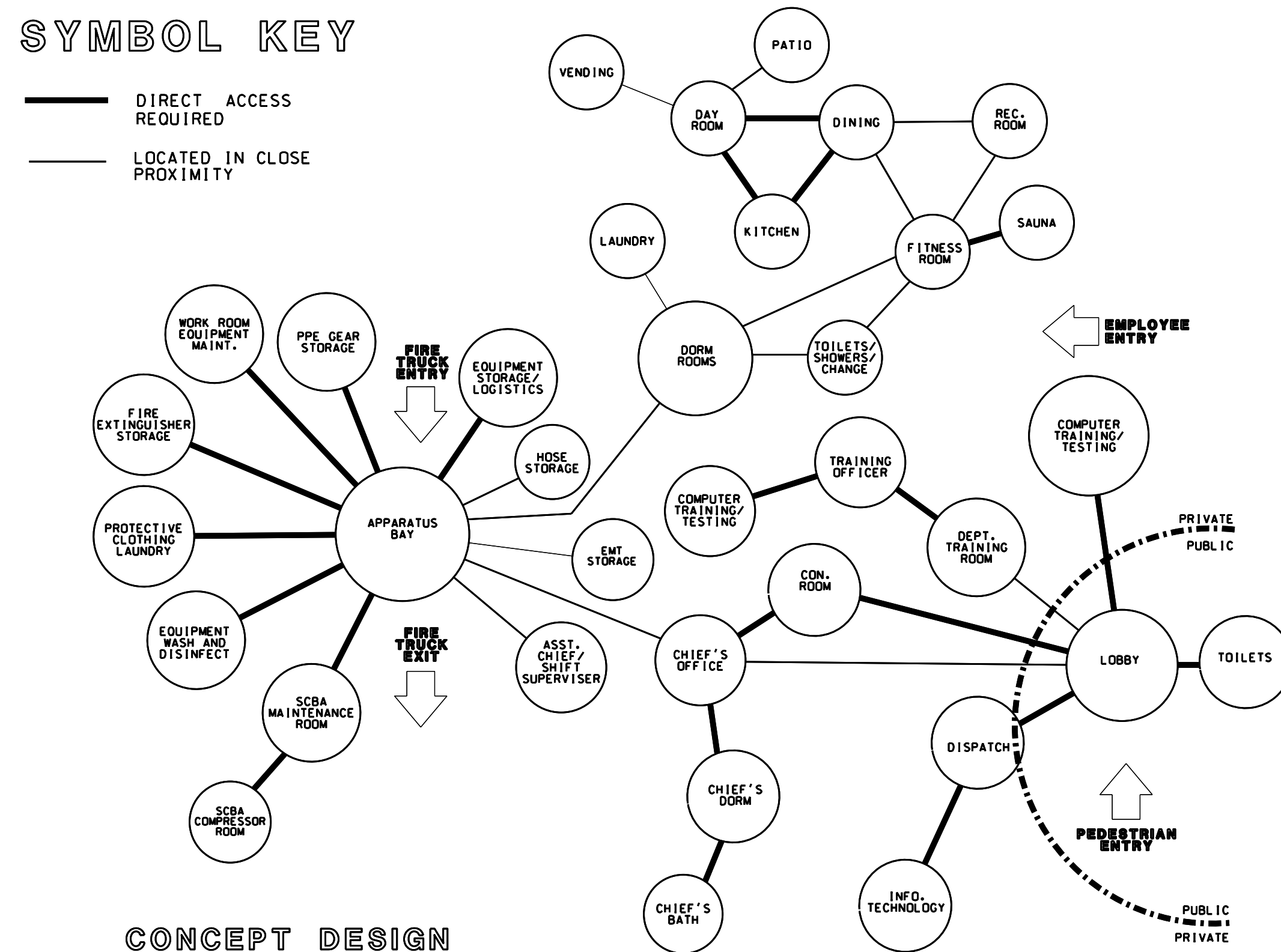
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# HEADQUARTER FIRE STATION SPACE PROGRAM DATA

US Army Corps of Engineers

## SYMBOL KEY

- DIRECT ACCESS REQUIRED
- LOCATED IN CLOSE PROXIMITY



CONCEPT DESIGN  
HEADQUARTER FIRE STATION

Rev.	Date	By	Check	Design	Drawings	Notes
01	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	01	
02	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	02	
03	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	03	
04	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	04	
05	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	05	
06	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	06	
07	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	07	
08	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	08	
09	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	09	
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11	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	11	
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13	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	13	
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15	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	15	
16	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	16	
17	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	17	
18	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	18	
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20	06 Jan 2009	CE WAC-ED-SC-A	CE WAC-ED-SC-A	Design	20	

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ARMY FIRE STATION DESIGN GUIDE  
FOR  
HEADQUARTERS FIRE STATION

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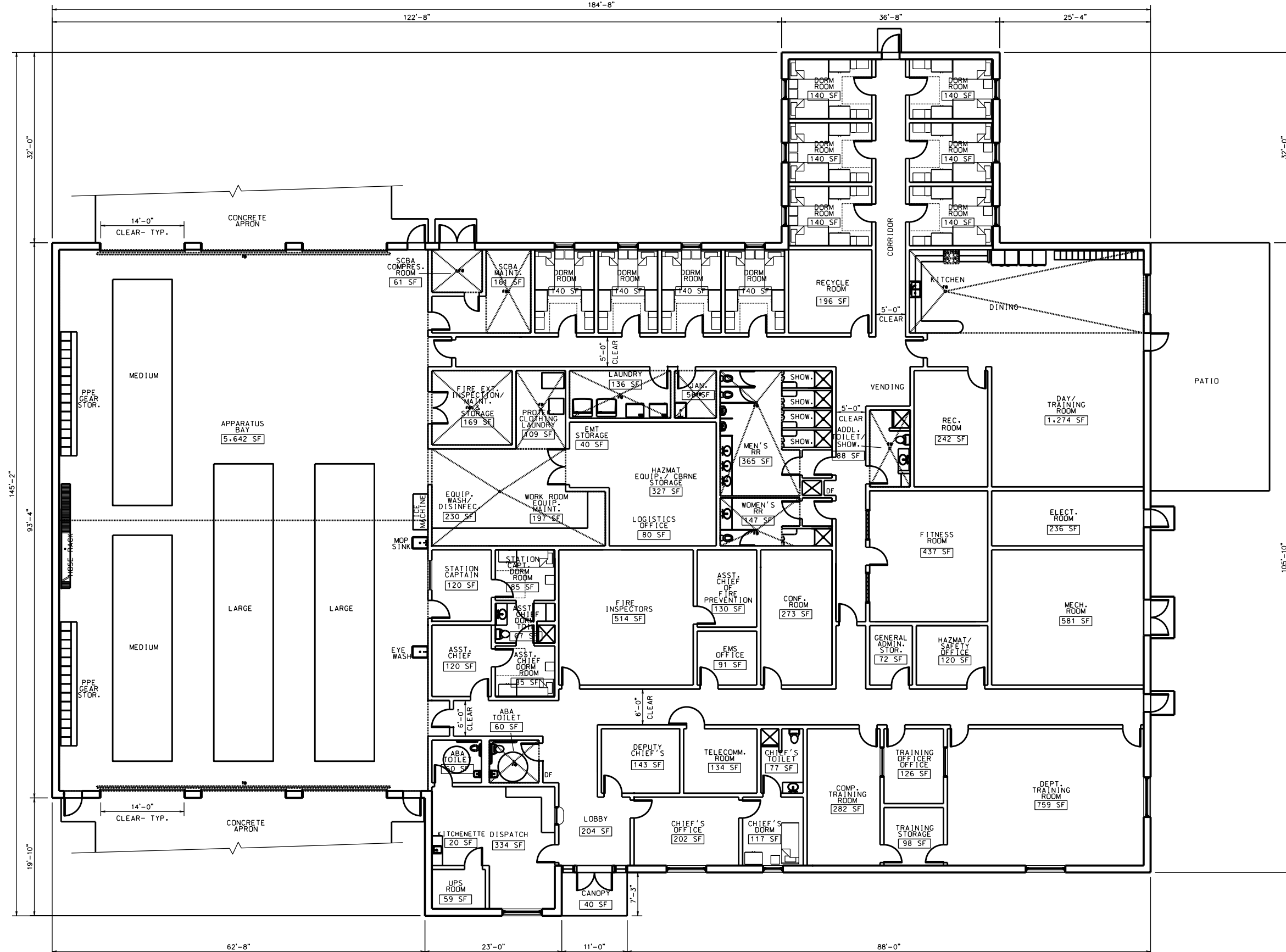
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**ARMY FIRE STATION DESIGN GUIDE  
FOR  
HEADQUARTERS FIRE STATION**

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number:  
**A6-HQ**  
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1 FLOOR PLAN  
TWO COMPANY HEADQUARTERS FIRE STATION  
A6-HQ SCALE: 1' - 0" = 1/8" 20,146 SQ.FT.

FIRST FLOOR= 20,106 SF  
CANOPY= 40 SF  
GROSS TOTAL= 20,146 SF





**US Army Corps  
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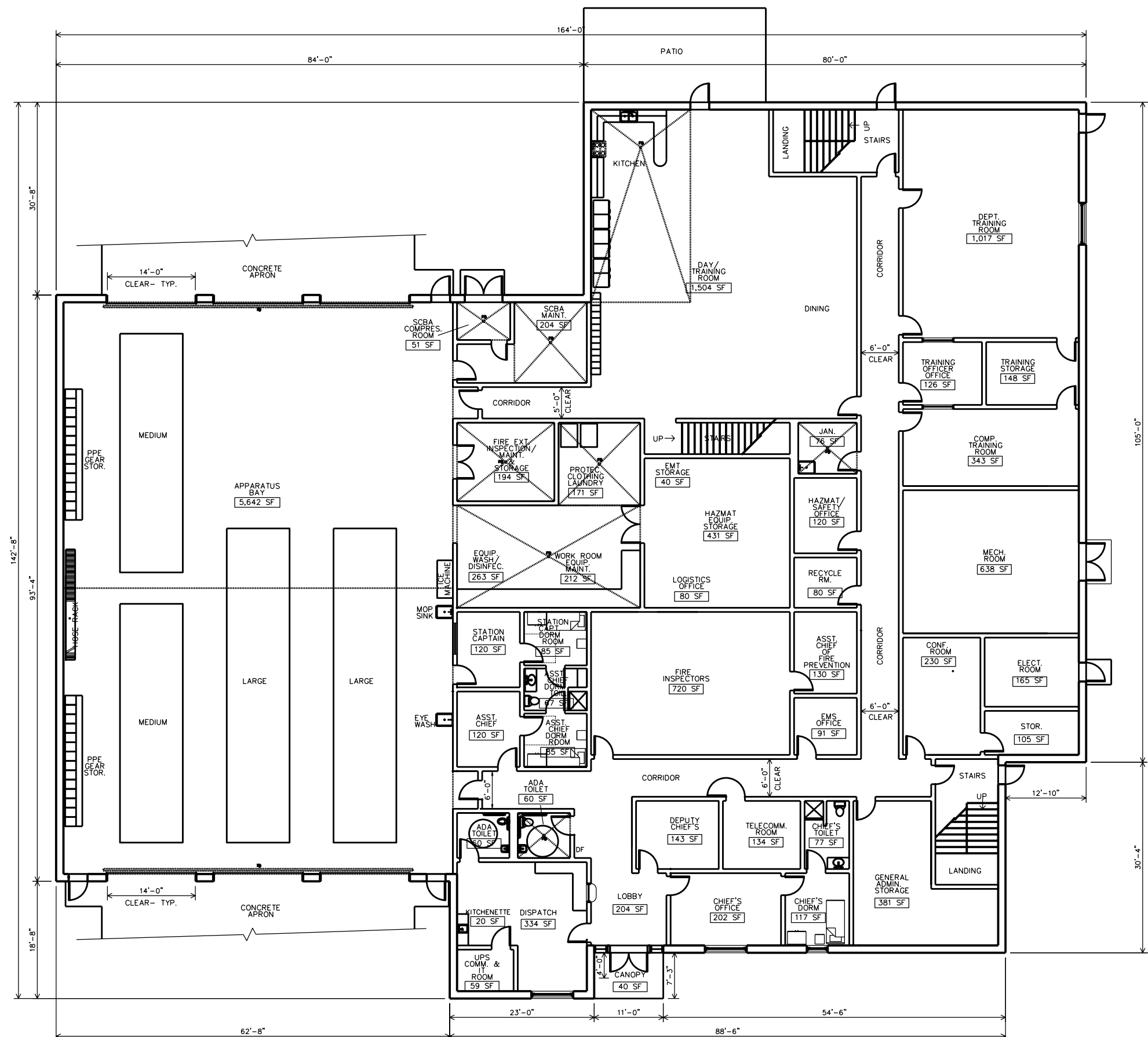
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**FOR HEADQUARTERS FIRE STATION**

**Sheet  
reference  
numbers**

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FIRST FLOOR= 18,689 SF  
SECOND FLOOR= 8,849 SF  
CANOPY= 40 SF  
GROSS TOTAL= 27,578 SF



FIRST FLOOR PLAN- TWO STORY  
THREE COMPANY HEADQUARTERS FIRE STATION  
SCALE: 1'- 0"=1/8" 27,578 SF

A horizontal timeline bar representing the study duration. The bar is divided into three main sections: a checkered section from 0 to 5 weeks labeled 'Baseline', a solid black section from 5 to 10 weeks labeled 'Intervention', and a white section from 10 to 40 weeks labeled 'Follow-up'. Numerical markers are placed at 0, 5, 10, 20, and 40 along the bottom of the bar.

#### 4.0 APPLICABLE CRITERIA

Unless a specific document version or date is indicated, use criteria from the most current references, including any applicable addenda, unless otherwise stated in the contract or task order, as of the date of the Contractor's latest accepted proposal or date of issue of the contract or task order solicitation, whichever is later. In the event of conflict between References and/or Applicable Military Criteria, apply the most stringent requirement, unless otherwise specifically noted in the contract or task order.

##### 4.1. INDUSTRY CRITERIA

Applicable design and construction criteria references are listed in Table 1 below. This list is not intended to include all criteria that may apply or to restrict design and construction to only those references listed. See also Paragraph 3 for additional facility-specific applicable criteria.

**Table 1: Industry Criteria**

<b>Air Conditioning and Refrigeration Institute (ARI)</b>	
ARI 310/380	Packaged Terminal Air-Conditioners and Heat Pumps
ARI 440	Room Fan-Coil and Unit Ventilator
ANSI/ARI 430-99	Central Station Air Handling Units
ARI 445	Room Air-Induction Units
ARI 880	Air Terminals
<b>Air Movement and Control Association (AMCA)</b>	
AMCA 210	Laboratory Methods of Testing Fans for Rating
<b>American Architectural Manufacturers Association (AAMA)</b>	
AAMA 605	Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
AAMA 607.1	Voluntary Guide Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum
AAMA 1503	Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections
<b>American Association of State Highway and Transportation Officials (AASHTO)</b>	



	Roadside Design Guide [guardrails, roadside safety devices]
	Standard Specifications for Transportation Materials and Methods of Sampling and Testing [Road Construction Materials]
	Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals
	Guide for Design of Pavement Structures, Volumes 1 and 2 [pavement design guide]
	A Policy of Geometric Design of Highways and Streets
<b>American Bearing Manufacturers Association (AFBMA)</b>	
AFBMA Std. 9	Load Ratings and Fatigue Life for Ball Bearings
AFBMA Std. 11	Load Ratings and Fatigue Life for Roller Bearings
<b>American Boiler Manufacturers Association (ABMA)</b>	
ABMA ISEI	Industry Standards and Engineering Information
<b>American Concrete Institute</b>	
ACI 302.2R	Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials
ACI 318	Building Code Requirements for Structural Concrete
ACI SP-66	ACI Detailing Manual
ACI 530	Building Code Requirements for Masonry Structures
<b>ADA Standards for Accessible Design</b>	
See US Access Board	ADA and ABA Accessibility Guidelines for Buildings and Facilities, Chapters 3-10.
<b>American Institute of Steel Construction (AISC)</b>	
	Manual of Steel Construction – 13 <sup>th</sup> Edition (or latest version)

<b>American Iron and Steel Institute</b>	
AISI S100	North American Specification for the Design of Cold-Formed Steel Structural Members
<b>American National Standards Institute 11 (ANSI)</b>	
ANSI Z21.10.1	Gas Water Heaters Vol. 1, Storage water Heaters with Input Ratings of 75,000 Btu per Hour or less
ANSI Z124.3	American National Standard for Plastic Lavatories
ANSI Z124.6	Plastic Sinks
ANSI Z21.45	Flexible Connectors of Other Than All-Metal Construction for Gas Appliances
ANSI/IEEE C2	National Electrical Safety Code
ANSI/AF&PA NDS	National Design Specification for Wood Construction
<b>American Society of Civil Engineers (ASCE)</b>	
ASCE 7	Minimum Design Loads for Buildings and Other Structures
ASCE 37	Design and Construction of Sanitary and Storm Sewers, Manuals and Reports on Engineering Practice [sanitary sewer and storm drain design criteria]
ASCE/SEI 31-03	Seismic Evaluation of Existing Buildings [Existing Building Alteration/Renovation]
ASCE/SEI 41-06	Seismic Rehabilitation of Existing Buildings [Existing Building Alteration/Renovation]
<b>American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)</b>	
ASHRAE 90.1	ANSI/ASHRAE/IESNA 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE Guideline 0	The Commissioning Process
ASHRAE Guideline 1.1	The HVAC Commissioning Process

ASHRAE Handbooks	Fundamentals, HVAC Applications, Systems and Equipment, Refrigeration (Applicable, except as otherwise specified)
ASHRAE Standard 15	Safety Standard for Refrigeration Systems
ASHRAE Standard 62.1	Ventilation for Acceptable Indoor Air Quality
ASHRAE Standard 55	Thermal Environmental Conditions for Human Occupancy (Design portion is applicable, except where precluded by other project requirements.)
ASHRAE Standard 189.1	<a href="#">Standard for the Design of High-Performance Green Buildings (ANSI Approved; USGBC and IES Co-sponsored)</a> , - (APPLICABLE TO THE EXTENT SPECIFICALLY CALLED OUT IN THE CONTRACT)
<b>American Society of Mechanical Engineers International (ASME)</b>	
ASME BPVC SEC VII	Boiler and Pressure Vessel Code: Section VII Recommended Guidelines for the Care of Power Boilers
ASME A17.1	Safety Code for Elevators and Escalators
ASME B 31 (Series)	Piping Codes
<b>American Water Works Association (AWWA)</b>	
	Standards [standards for water line materials and construction]
<b>American Welding Society</b>	
	Welding Handbook
	Welding Codes and Specifications (as applicable to application, see International Building Code for example)
<b>Architectural Woodwork Institute (AWI)</b>	
Latest Version	AWI Quality Standards
<b>Associated Air Balance Council (AABC)</b>	
AABC MN-1	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems

	AABC Associated Air Balance Council Testing and Balance Procedures
<b>ASTM International</b>	
ASTM C1060-90(	Standard Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Frame Buildings
ASTM E 779	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
ASTM E1827-96	Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
<b>Builders Hardware Manufacturers Association (BHMA)</b>	
ANSI/BHMA	The Various BHMA American National Standards
<b>Building Industry Consulting Service International</b>	
	Telecommunications Distribution Methods Manual (TDMM)
	Customer-Owned Outside Plant Design Manual (CO-OSP)
<b>Code of Federal Regulations (CFR)</b>	
49 CFR 192	Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards
10 CFR 430	Energy Conservation Program for Consumer Products
<b>Consumer Electronics Association</b>	
CEA 709.1B	Control Network Protocol Specification
CEA 709.3	Free-Topology Twisted-Pair Channel Specification
CEA 852	Tunneling Component Network Protocols Over Internet Protocol Channels
<b>Electronic Industries Association (EIA)</b>	
ANSI/EIA/TIA 568	Structured Cabling Series

ANSI/EIA/TIA 569	Commercial Building Standard for Telecommunications Pathways and Spaces (includes ADDENDA)
ANSI/TIA/EIA-606	Administrative Standard for the Telecommunications Infrastructure of Commercial Buildings
J-STD EIA/TIA 607	Commercial Building Grounding and Bonding Requirements for Telecommunications
<b>Federal Highway Administration (FHWA)</b>	
	Manual on Uniform Traffic Control Devices for Streets and Highways [signage and pavement markings for streets and highways]
FHWA-NHI-01-021	Hydraulic Engineering Circular No. 22, Second Edition, URBAN DRAINAGE DESIGN MANUAL
<b>Illuminating Engineering Society of North America (IESNA)</b>	
IESNA RP-1	Office Lighting
IESNA RP-8	Roadway Lighting
IESNA Lighting Handbook	Reference and Application
<b>Institute of Electrical and Electronics Engineers Inc. (IEEE)</b>	
	Standard for Use of the International System of Units (SI): the Modern Metric System
Standard 1100	Recommended Practice for Powering and Grounding Sensitive Electronic Equipment
<b>International Code Council (ICC)</b>	
IBC	<p>International Building Code</p> <p>Note: All references in the International Building Code to the International Electrical Code shall be considered to be references to NFPA 70.</p> <p>All references in the International Building Code to the International Fuel Gas Code shall be considered to be references to NFPA 54 and NFPA 58.</p> <p>All references in the International Building Code to the International Fire</p>

	Code and Chapter 9 shall be considered to be references to Unified Facilities Criteria (UFC) 3-600-01.
IMC	International Mechanical Code –  Note: For all references to “HEATING AND COOLING LOAD CALCULATIONS”, follow ASHRAE 90.1  Note: For all references to “VENTILATION”, follow ASHRAE 62.1
IRC	International Residential Code
IPC	International Plumbing Code
IEC	Energy Conservation Code (IEC) –Applicable only to the extent specifically referenced herein. Refer to Paragraph 5, ENERGY CONSERVATION requirements.
IGC	International Gas Code - not applicable. Follow NFPA 54, National Fuel Gas Code and NFPA 58, Liquefied Petroleum Gas Code.
<b>International Organization for Standardization (ISO)</b>	
ISO 6781:1983	Qualitative detection of thermal irregularities in building envelopes – infrared method
<b>LonMark International (LonMark)</b>	
LonMark Interoperability Guidelines	(available at <a href="http://www.lonmark.org">www.lonmark.org</a> ), including: Application Layer Guidelines, Layer 1-6 Guidelines, and External Interface File (XIF) Reference Guide
LonMark Resource Files	(available at <a href="http://www.lonmark.org">www.lonmark.org</a> ), including Standard Network Variable Type (SNVT) definitions
<b>Metal Building Manufacturers Association (MBMA)</b>	
	Metal Building Systems Manual
<b>Midwest Insulation Contractors Association (MICA)</b>	
	National Commercial and Industrial Insulation Standards Manual
<b>National Association of Corrosion Engineers International (NACE)</b>	

NACE RP0169	Control of External Corrosion on Underground or Submerged Metallic Piping Systems
NACE RP0185	Extruded, Polyolefin Resin Coating Systems with Adhesives for Underground or Submerged Pipe
NACE RP0285	Corrosion Control of Underground Storage Tank Systems by Cathodic Protection
NACE RP0286	Electrical Isolation of Cathodically Protected Pipelines
<b>National Electrical Manufacturers Association (NEMA)</b>	
<b>National Environmental Balancing Bureau (NEBB)</b>	
	Procedural Standards Procedural Standards for Testing Adjusting Balancing of Environmental Systems
<b>National Fire Protection Association (NFPA)</b>	
NFPA 10	Standard for Portable Fire Extinguishers
NFPA 13	Installation of Sprinkler Systems
NFPA 13R	Residential Occupancies up to and Including Four Stories in Height Sprinkler Systems
NFPA 14	Standard for the Installation of Standpipes and Hose Systems
NFPA 20	Installation of Centrifugal Fire Pumps
NFPA 24 NFPA 25	Standard for the Installation of Private Fire Service Mains and Their Appurtenances [underground fire protection system design]  Inspection, Testing And Maintenance Of Water-Based Fire Protection Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 30A	Motor Fuel Dispensing Facilities and Repair Garages
NFPA 31	Installation of Oil Burning Equipment
NFPA 54	National Fuel Gas Code

NFPA 58	Liquefied Petroleum Gas Code
NFPA 70	National Electrical Code
NFPA 70E	Standard for Electrical Safety in the Workplace
NFPA 72	National Fire Alarm Code
NFPA 76	Fire Protection of Telecommunications Facilities
NFPA 80	Standard for Fire Doors and Fire Windows
NFPA 90a	Installation of Air Conditioning and Ventilating Systems
NFPA 96	Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
NFPA 101	Life Safety Code
NFPA 780	Standard for the Installation of Lightning Protection Systems
<b>National Roofing Contractor's Association (NRCA)</b>	
	Roofing and Waterproofing Manual
<b>National Sanitation Foundation, International</b>	
NSF/ANSI Std. 2, 3, 4, 5, 6, 7, 8, 12, 13, 18, 20, 21, 25, 29, 35, 36, 37, 51, 52, 59, 169	Food Equipment Standards
ANSI/UL Std. 73, 197, 471, 621, 763	Food Equipment Standards
CSA Std. C22.2 No. 109, 120, 195	Food Equipment Standards
<b>Occupational Safety and Health Administration (OSHA)</b>	
Title 29, Part 1926	OSHA Construction Industry Standards, Title 29, Code of Federal Regulations, Part 1926, Safety and Health Regulations for Construction



<b>Plumbing and Drainage Institute (PDI)</b>	
PDI G 101	Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data
PDI WH201	Water Hammer Arrestors
<b>Precast Concrete Institute</b>	
PCI Design Handbook	Precast and Prestressed Concrete
<b>Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)</b>	
SMACNA HVAC Duct Construction Standards	HVAC Duct Construction Standards - Metal and Flexible
SMACNA Architectural Manual	Architectural Sheet Metal Manual
SMACNA HVAC TAB	HVAC Systems - Testing, Adjusting and Balancing
<b>State/Local Regulations</b>	
	State Department of Transportation Standard Specifications for Highway and Bridge Construction
	Sedimentation and Erosion Control Design Requirements
	Environmental Control Requirements
	Storm Water Management Requirements
<b>Steel Door Institute (SDI)</b>	
ANSI A250.8/SDI 100	Standard Steel Doors and Frames
<b>Steel Deck Institute</b>	
	SDI Diaphragm Design Manual
<b>Steel Joist Institute</b>	
	Catalog of Standard Specifications and Load Tables for Steel Joists and

	Joist Girders
<b>Underwriters Laboratories (UL)</b>	
UL 96A	Installation Requirements for Lightning Protection Systems
UL 300	Standard for Safety for Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas
<b>UNITED STATES ACCESS BOARD: U.S. ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD</b>	
ADA and ABA Accessibility Guidelines for Buildings and Facilities	<p>ABA Accessibility Standard for DoD Facilities</p> <p>Derived from the ADA and ABA Accessibility Guidelines: Specifically includes: ABA Chapters 1 and 2 and Chapters 3 through 10.</p> <p>Use this reference in lieu of IBC Chapter 11.</p> <p>Excluded are:</p> <p>(a) Facilities, or portions of facilities, on a military installation that are designed and constructed for use exclusively by able-bodied military personnel (See Paragraph 3 for any reference to this exclusion).</p> <p>(b) Reserve and National Guard facilities, or portions of such facilities, owned by or under the control of the Department of Defense, that are designed and constructed for use exclusively by able-bodied military personnel. (See paragraph 3 for any reference to this exclusion).</p>
<b>U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES</b>	
	FDA National Food Code
<b>U.S. GREEN BUILDING COUNCIL (USGBC)</b>	
LEED-NC	Green Building Rating System for New Construction & Major Renovations
	Application Guide for Multiple Buildings and On-Campus Building Projects

#### 4.2. MILITARY CRITERIA

The project shall conform to the following criteria. Certain design impacts and features due to these criteria are noted for the benefit of the offeror. However, all requirements of the referenced criteria will be applicable, whether noted or not, unless otherwise specified herein.

4.2.1. Energy Policy Act of 2005 (Public Law 109-58) (applies only to the extent specifically implemented in the contract, which may or may not directly cite or reference EPACT)

#### 4.2.2. Executive Order 12770: Metric Usage In Federal Government

(a) Metric design and construction is required except when it increases construction cost. Offeror to determine most cost efficient system of measurement to be used for the project.

#### 4.2.3. TB MED 530: Occupational and Environmental Health Food Sanitation

4.2.4. Unified Facilities Criteria (UFC) 3-410-01FA: Heating, Ventilating, and Air Conditioning - applicable only to the extent specified in paragraph 5, herein.

4.2.5. Deleted.

4.2.6. UFC 3-600-01 Design: Fire Protection Engineering for Facilities. Use the latest edition of the IBC in coordination with this UFC. Use Chapters 3, 6, 7, 33 and UFC 3-600-01. If any conflict occurs between these Chapters and UFC 3-600-01, the requirements of UFC 3-600-01 take precedence. Use UFC 3-600-01 in lieu of IBC Chapters 4, 8,9,10.

#### 4.2.7. UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings

4.2.8. UFC 4-023-03 Design of Buildings to Resist Progressive Collapse (Use most recent version, regardless of references thereto in other publications)

(a) Note the option to use tie force method or alternate path design for Occupancy Category II.

#### 4.2.9. UFC 4-021-01 Design and O&M: Mass Notification Systems

4.2.10. Technical Criteria for Installation Information Infrastructure Architecture (I3A)

(a) Email: [DetrickISECI3Aguide@conus.army.mil](mailto:DetrickISECI3Aguide@conus.army.mil)

4.2.11. U.S. Army Information Systems Engineering Command (USAISEC) SECRET Internet Protocol (IP) Router Network (SIPRNET) Technical Implementation Criteria (STIC).. See Paragraph 3 for applicability to specific facility type. May not apply to every facility. This is mandatory criteria for those facilities with SIPRNET.

4.2.11.1. Draft Guide Specification for Section 27 05 28 PROTECTIVE DISTRIBUTION SYSTEM (PDS) FOR SIPRNET COMMUNICATIONS SYSTEMS, found at [http://mrsi.usace.army.mil/rfp/Shared%20Documents/SECTION\\_270528-v3.pdf](http://mrsi.usace.army.mil/rfp/Shared%20Documents/SECTION_270528-v3.pdf)

## 5.0 GENERAL TECHNICAL REQUIREMENTS

This paragraph contains technical requirements with general applicability to Army facilities. See also Paragraph 3 for facility type-specific operational, functional and technical requirements. Residential or similar grade finishes and materials are not acceptable for inclusion in these buildings, unless otherwise specifically allowed.

### 5.1. SITE PLANNING AND DESIGN

5.1.1. STANDARDS AND CODES: The site planning and design shall conform to APPLICABLE CRITERIA and to paragraph 6, PROJECT SPECIFIC REQUIREMENTS.

5.1.2. SITE PLANNING OBJECTIVES: Group buildings in configurations that create a sense of community and promote pedestrian use. See paragraph 3 for additional site planning requirements relating to building functions.

5.1.2.1. Provide enclosures and or visual screening devices for Outdoor Utility such as dumpsters, emergency generators, transformers, heating, ventilation, and air conditioning units from streetscape and courtyard views to limit visual impact. Enclosures shall be compatible with the building they serve and accessible by vehicle. The location of dumpsters can have a significant visual impact and should be addressed as part of an overall building design and incorporated in site planning.

5.1.2.2. Where included in the project, dumpster pads shall be concrete (minimum of 8 inches thick on 4 inch base course, unless site conditions dictate more conservative requirements) and directly accessible by way of a paved service drive or parking lot with adequate overhead clearance for collection vehicles. Provide space at dumpster areas for recycling receptacles. Coordinate with Installation on recycling receptacle types, sizes and access requirements and provide space at dumpster areas to accommodate them.

5.1.2.3. Vehicular Circulation. Apply design vehicle templates provided by the American Association of State Highway and Transportation Officials (AASHTO) to the site design. The passenger car class includes passenger cars and light trucks, such as vans and pick-ups. The passenger car template is equivalent to the non-organizational – privately owned vehicle (POV). The truck class template includes single-unit trucks, recreation vehicles, buses, truck tractor-semi-trailer combinations, and trucks or truck tractors with semi-trailers in combination with full trailers. Provide vehicle clearances required to meet traffic safety for emergency vehicles, service vehicles, and moving vans. Provide required traffic control signage Site entrances and site drive aisles shall maximize spacing between drives, incorporate right-angle turns, and limit points of conflict between traffic. Design Services Drives to restrict access to unauthorized vehicles by removable bollards, gates, or other barriers to meet Anti-Terrorism/Force Protection (ATFP) requirements. Orient service drives to building entrances other than the primary pedestrian entry at the front of the building.

5.1.2.4. Provide Emergency Vehicle Access around the facility and shall be in accordance with AT/FP requirements. Maintain a 33-foot clear zone buffer for emergency vehicles, designed to prevent other vehicles from entering the AT/FP standoff to the building.

5.1.2.5. Clear and grub all trees and vegetation necessary for construction; but, save as many trees as possible. Protect trees to be saved during the construction process from equipment.

5.1.2.6. Stormwater Management. Employ design and construction strategies (Best Management Practices) that reduce stormwater runoff, reduce discharges of polluted water offsite and maintain or restore predevelopment hydrology with respect to temperature, rate, volume and duration of flow to the maximum extent practicable. See paragraph 6, PROJECT SPECIFIC requirements for additional information.

5.1.3. EXTERIOR SIGNAGE: Provide exterior signage in accordance with Appendix H, Exterior Signage. Provide exterior NO SMOKING signage that conveys building and grounds smoking policy.

5.1.4. EXISTING UTILITIES: Base utilities maps and capacities for this site are included as part of this RFP. See paragraph 6 for more detailed information.

## 5.2. SITE ENGINEERING

5.2.1. STANDARDS AND CODES: The site engineering shall conform to APPLICABLE CRITERIA.

### 5.2.2. SOILS:

5.2.2.1. A report has been prepared to characterize the subsurface conditions at the project site and is **appended to these specifications**. The report provides a general overview of the soil and geologic conditions with detailed descriptions at discrete boring locations. The Contractor's team shall include a licensed geotechnical engineer to interpret the report and develop earthwork and foundation recommendations and design parameters in which to base the contractor's design. If any additional subsurface investigation or laboratory analysis is required to better characterize the site or develop the final design, the Contractor shall perform it under the direction of a licensed geotechnical engineer. There will be no separate payment for the cost of additional tests. If differences between the Contractor's additional subsurface investigation and the government provided soils report or the reasonably expected conditions require material revisions in the design, an equitable adjustment may be made, in accordance with the provisions of the Differing Site Conditions clause. The basis for the adjustment would be the design and construction appropriate for the conditions described in the Government furnished report or the reasonably expected conditions, in comparison with any changes required by material differences in the actual conditions encountered, in accordance with the terms of contract clause Differing Site Conditions.

5.2.2.2. The contractor's licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal, as described in Section 01 33 16, *Design After Award*.

### 5.2.3. VEHICLE PAVEMENTS: (as applicable to the project)

5.2.3.1. Design procedures and materials shall conform to one of the following: 1) the USACE Pavement Transportation Computer Assisted Structural Engineering (PCASE) program, 2) American Association of State Highway and Transportation Officials (AASHTO) or, 3) the applicable state Department of Transportation standards in which the project is located. See paragraph 5.2.2.2 and Section 01 33 16 for required information for the Contractor's geotechnical evaluation report. The minimum flexible pavement section shall consist of 2 inches of asphalt and 6 inches of base or as required by the pavement design, whichever is greater, unless specifically identified by the Government to be a gravel road. Design roads and parking areas for a life expectancy of 25 years with normal maintenance. Parking area for tactical vehicles (as applicable to the project) shall be Portland Cement Concrete (PCC) rigid pavement design. For concrete pavements, submit joint layout plan for review and concurrence. Design pavements for military tracked vehicles (as applicable to the project) IAW USACE PCASE. Traffic estimates for each roadway area will be as shown on the drawings or listed in Section 01 10 00 Paragraph 6.4.4. Pavement markings and traffic signage shall comply with the Installation requirements and with the Manual on Uniform Traffic Control Devices.

#### 5.2.3.2. Parking Requirements.

(a) All handicap POV parking lots (where applicable in the facility specific requirements) shall meet the ADA and ABA Accessibility Guidelines for accessible parking spaces.

(b) Design POV parking spaces for the type of vehicles anticipated, but shall be a minimum of 9 ft by 18 ft for POVs, except for two wheel vehicles.

5.2.3.3. Sidewalks. Design the network of walks throughout the complex (where applicable) to facilitate pedestrian traffic among facilities, and minimize the need to use vehicles. Incorporate sidewalks to enhance the appearance of the site development, while creating a sense of entry at the primary patron entrances to the buildings. Minimum sidewalk requirements are in Paragraph 3, where applicable and/or paragraph 6 and/or site plans, where applicable..

5.2.4. CATHODIC PROTECTION: Provide cathodic protection systems for all underground metallic systems and metallic fittings/portions of non-metallic, underground systems, both inside and outside the building 5 foot line that are subject to corrosion. Coordinate final solutions with the installation to insure an approach that is consistent with installation cathodic protection programs.

5.2.5. UTILITIES: See paragraph 6.4.6 for specific information on ownership of utilities and utility requirements. Meter all utilities (gas, water, and electric, as applicable) to each facility. For Government owned utilities, install meters that are wireless data transmission capable as well as have a continuous manual reading option. All meters will be capable of at least hourly data logging and transmission and provide consumption data for gas, water, and electricity. Gas and electric meters will also provide demand readings based on consumption over a maximum of any 15 minute period. Configure all meters to transmit at least daily even if no receiver for the data is currently available at the time of project acceptance. For privatized utilities, coordinate with the privatization utility(ies) for the proper meter base and meter installation.

5.2.6. PERMITS: The CONTRACTOR shall be responsible for obtaining all permits (local, state and federal) required for design and construction of all site features and utilities.

5.2.7. IRRIGATION. Landscape irrigation systems, if provided, shall comply with the following:

5.2.7.1. Irrigation Potable Water Use Reduction. Reduce irrigation potable water use by 100 percent using LEED credit WE1.1 baseline (no potable water used for irrigation), except where precluded by other project requirements.

5.2.8. EPA WATERSENSE PRODUCTS AND CONTRACTORS. Except where precluded by other project requirements, use EPA WaterSense labeled products and irrigation contractors that are certified through a WaterSense labeled program where available.

### 5.3. ARCHITECTURE AND INTERIOR DESIGN:

This element will be evaluated per APPLICABLE CRITERIA under the quality focus.

5.3.1. STANDARDS AND CODES: The architecture and interior design shall conform to APPLICABLE CRITERIA.

5.3.2. GENERAL: Overall architectural goal is to provide a functional, quality, visually appealing facility that is a source of pride for the installation and delivered within the available budget and schedule.

5.3.3. COMPUTATION OF AREAS: See APPENDIX Q for how to compute gross and net areas of the facility(ies).

5.3.4. BUILDING EXTERIOR: Design buildings to enhance or compliment the visual environment of the Installation. Where appropriate, reflect a human scale to the facility. Building entrance should be architecturally defined and easily seen. When practical, exterior materials, roof forms, and detailing shall be compatible with the surrounding development and adjacent buildings on the Installation and follow locally established architectural themes. Use durable materials that are easy to maintain. Exterior colors shall conform to the Installation requirements. See paragraph 6.

5.3.4.1. Building Numbers: Permanently attach exterior signage on two faces of each building indicating the assigned building number or address. Building number signage details and locations shall conform to Appendix H, Exterior Signage.

### 5.3.5. BUILDING INTERIOR

5.3.5.1. Space Configuration: Arrange spaces in an efficient and functional manner in accordance with area adjacency matrices.

5.3.5.2. Surfaces: Appearance retention is the top priority for building and furniture related finishes. Provide low maintenance, easily cleaned room finishes that are commercially standard for the facility occupancy specified, unless noted otherwise.

5.3.5.3. Color: The color, texture and pattern selections for the finishes of the building shall provide an aesthetically pleasing, comfortable, easily maintainable and functional environment for the occupants. Coordinate the building colors and finishes for a cohesive design. Select colors appropriate for the building type. Use color, texture and pattern to path or way find through the building. Trendy colors that will become dated shall be limited to non-permanent finishes such as carpet and paint. Select finishes with regards to aesthetics, maintenance, durability, life safety and image. Limit the number of similar colors for each material. Use medium range colors for ceramic and porcelain tile grout to help hide soiling. Plastic laminate and solid surface materials shall have patterns that are mottled, flecked or speckled. Coordinate finish colors of fire extinguisher cabinets, receptacle bodies and plates, fire alarms / warning lights, emergency lighting, and other miscellaneous items with the building interior. Match color of equipment items on ceilings (speakers, smoke detectors, grills, etc.) the ceiling color.

5.3.5.4. Circulation: Circulation schemes must support easy way finding within the building.

5.3.5.5. Signage: Provide interior signage for overall way finding and life safety requirements. A comprehensive interior plan shall be from one manufacturer. Include the following sign types: (1) Lobby Directory, (2) Directional Signs; (3) Room Identification Signs; (4) Building Service Signs; (5) Regulatory Signs; (6) Official and Unofficial Signs (7) Visual Communication Boards (8) NO SMOKING signage that conveys building smoking policy. Use of emblems or logos may also be incorporated into the signage plan.

5.3.5.6. Window Treatment: Provide interior window treatments with adjustable control in all exterior window locations for control of day light coming in windows or privacy at night. Maintain uniformity of treatment color and material to the maximum extent possible within a building.

5.3.5.7. Casework: Unless, otherwise specified, all casework for Cabinetry and cases shall be "custom grade", as described in the AWI Quality Standards.

### 5.3.6. COMPREHENSIVE INTERIOR DESIGN

5.3.6.1. Comprehensive Interior Design includes the integration of a Structural Interior Design (SID) and a Furniture, Fixtures and Equipment (FF&E) design and package. SID requires the design, selection and coordination of interior finish materials that are integral to or attached to the building structure. Completion of a SID involves the selection and specification of applied finishes for the building's interior features including, but not limited to, walls, floors, ceilings, trims, doors, windows, window treatments, built-in furnishings and installed equipment, lighting, and signage. The SID package includes finish schedules, finish samples and any supporting interior elevations, details or plans necessary to communicate the building finish design and build out. The SID also provides basic space planning for the anticipated FF&E requirements in conjunction with the functional layout of the building and design issues such as life safety, privacy, acoustics, lighting, ventilation, and accessibility. See Section 01 33 16 for SID design procedures.

5.3.6.2. The FF&E design and package includes the design, selection, color coordination and of the required furnishing items necessary to meet the functional, operational, sustainability, and aesthetic needs of the facility coordinated with the interior finish materials in the SID. The FF&E package includes the specification, procurement documentation, placement plans, ordering and finish information on all freestanding furnishings and accessories, and a cost estimate. Coordinate the selection of furniture style, function and configuration with the defined requirements. Examples of FF&E items include, but are not limited to workstations, seating, files, tables, beds, wardrobes, draperies and accessories as well as marker boards, tack boards, and presentation screens. Criteria for furniture selection include function and ergonomics, maintenance, durability, sustainability, comfort and cost. See Section 01 33 16 for FFE design procedures.

#### 5.4. STRUCTURAL DESIGN

5.4.1. STANDARDS AND CODES: The structural design shall conform to APPLICABLE CRITERIA.

5.4.2. GENERAL: The structural system must be compatible with the intended functions and components that allows for future flexibility and reconfigurations of the interior space. Do not locate columns, for instance, in rooms requiring visibility, circulation or open space, including, but not limited to entries, hallways, common areas, classrooms, etc. Select an economical structural system based upon facility size, projected load requirements and local availability of materials and labor. Base the structural design on accurate, site specific geotechnical information and anticipated loads for the building types and geographical location. Consider climate conditions, high humidity, industrial atmosphere, saltwater exposure, or other adverse conditions when selecting the type of cement and admixtures used in concrete, the concrete cover on reinforcing steel, the coatings on structural members, expansion joints, the level of corrosion protection, and the structural systems. Analyze, design and detail each building as a complete structural system. Design structural elements to preclude damage to finishes, partitions and other frangible, non-structural elements to prevent impaired operability of moveable components; and to prevent cladding leakage and roof ponding. Limit deflections of structural members to the allowable of the applicable material standard, e.g., ACI, AISC, Brick Industry Association, etc. When modular units or other pre-fabricated construction is used or combined with stick-built construction, fully coordinate and integrate the overall structural design between the two different or interfacing construction types. If the state that the project is located in requires separate, specific licensing for structural engineers (for instance, such as in Florida, California and others), then the structural engineer designer of record must be registered in that state.

5.4.3. LOADS: See paragraph 3 for facility specific (if applicable) and paragraph 6 for site and project specific structural loading criteria. Unless otherwise specified in paragraph 6, use Exposure Category C for wind. If not specified, use Category C unless the Designer of Record can satisfactorily justify another Exposure Category in its design analysis based on the facility Master Plan. Submit such exceptions for approval as early as possible and prior to the Interim Design Submittal in Section "Design After Award". Design the ancillary building items, e.g. doors, window jambs and connections, overhead architectural features, systems and equipment bracing, ducting, piping, etc. for gravity, seismic, lateral loads and for the requirements of UFC 4-010-01, DOD Minimum Antiterrorism Standards for Buildings. Ensure and document that the design of glazed items includes, but is not limited to, the following items under the design loads prescribed in UFC 4-010-01:

- (a) Supporting members of glazed elements, e.g. window jamb, sill, header
- (b) Connections of glazed element to supporting members, e.g. window to header
- (c) Connections of supporting members to each other, e.g. header to jamb
- (d) Connections of supporting members to structural system, e.g. jamb to foundation.

5.4.4. TERMITE TREATMENT: (Except Alaska) Provide termite prevention treatment in accordance with Installation and local building code requirements, using licensed chemicals and licensed applicator firm.



## 5.5. THERMAL PERFORMANCE

5.5.1. STANDARDS AND CODES: Building construction and thermal insulation for mechanical systems shall conform to APPLICABLE CRITERIA.

5.5.2. BUILDING ENVELOPE SEALING PERFORMANCE REQUIREMENT. Design and construct the building envelope for office buildings, office portions of mixed office and open space (e.g., company operations facilities), dining, barracks and instructional/training facilities with a continuous air barrier to control air leakage into, or out of, the conditioned space. Clearly identify all air barrier components of each envelope assembly on construction documents and detail the joints, interconnections and penetrations of the air barrier components. Clearly identify the boundary limits of the building air barriers, and of the zone or zones to be tested for building air tightness on the drawings. The use of painted interior walls is not an acceptable air barrier method.

5.5.2.1. Trace a continuous plane of air-tightness throughout the building envelope and make flexible and seal all moving joints.

5.5.2.2. The air barrier material(s) must have an air permeance not to exceed 0.004 cfm / sf at 0.3" wg (0.02 L/s.m<sup>2</sup> @ 75 Pa) when tested in accordance with ASTM E 2178

5.5.2.3. Join and seal the air barrier material of each assembly in a flexible manner to the air barrier material of adjacent assemblies, allowing for the relative movement of these assemblies and components.

5.5.2.4. Support the air barrier so as to withstand the maximum positive and negative air pressure to be placed on the building without displacement, or damage, and transfer the load to the structure.

5.5.2.5. Seal all penetrations of the air barrier. If any unavoidable penetrations of the air barrier by electrical boxes, plumbing fixture boxes, and other assemblies are not airtight, make them airtight by sealing the assembly and the interface between the assembly and the air barrier or by extending the air barrier over the assembly.

5.5.2.6. The air barrier must be durable to last the anticipated service life of the assembly.

5.5.2.7. Do not install lighting fixtures with ventilation holes through the air barrier

5.5.2.8. Provide a motorized damper in the closed position and connected to the fire alarm system to open on call and fail in the open position for any fixed open louvers at elevator shafts. Coordinate the motorized elevator hoistway vent damper(s) with the Fire Protection System design in paragraph 5.10. Ensure that the damper(s) is accessible to facilitate regular inspection and maintenance.

5.5.2.9. Damper and control to close all ventilation or make-up air intakes and exhausts, , etc., when leakage can occur during inactive periods. Atrium smoke exhaust and intakes shall only open when activated per IBC and other applicable Fire Code requirements.

5.5.2.10. If garages under buildings are applicable, compartmentalize garages by providing air-tight vestibules at building access points.

5.5.2.11. Compartmentalize spaces under negative pressure such as boiler rooms and provide make-up air for combustion.

5.5.2.12. Performance Criteria and Substantiation: Submit the qualifications and experience of the testing entity for approval. Demonstrate performance of the continuous air barrier for the opaque building envelope by the following tests:

- (a) Develop an Air Barrier Quality Control plan to assure that a competent air barrier inspector/specialist inspects the critical components prior to them being concealed. At a minimum, three onsite inspections are required during construction to assure the completeness of the construction and design.
- (b) Test the completed building and demonstrate that the air leakage rate of the building envelope does not exceed 0.25cfm/ft<sup>2</sup> at a pressure differential of 0.3" w.g.(75 Pa) in accordance with ASTM's E 779 (2003) or E-1827-96 (2002). Accomplish tests using both pressurization and depressurization.. Divide the volume of air leakage in cfm @ 0.3" w.g. (L/s @ 75 Pa) by the area of the pressure boundary of the building, including roof or ceiling, walls and floor to produce the air leakage rate in cfm/ft<sup>2</sup> @ 0.3" w.g. (L/s.m<sup>2</sup> @ 75 Pa). Do not test the building until verifying that the continuous air barrier is in place and installed without failures in accordance with installation instructions so that repairs to the continuous air barrier, if needed to comply with the required air leakage rate, can be done in a timely manner.
- (c) Test the completed building using Infrared Thermography testing. Use infrared cameras with a resolution of 0.1deg C or better. Perform testing on the building envelope in accordance with ISO 6781:1983 and ASTM C1060-90(1997). Determine air leakage pathways using ASTM E 1186-03 Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems, and perform corrective work as necessary to achieve the whole building air leakage rate specified in (a) above.
- (d) Notify the Government at least three working days prior to the tests to provide the Government the opportunity to witness the tests. Provide the Government written test results confirming the results of all tests.

## 5.6. PLUMBING

5.6.1. STANDARDS AND CODES: The plumbing system shall conform to APPLICABLE CRITERIA.

5.6.2. PRECAUTIONS FOR EXPANSIVE SOILS: Where expansive soils are present, include design features for underslab piping systems and underground piping serving chillers, cooling towers, etc, to control forces resulting from soil heave. Some possible solutions include, but are not necessarily limited to, features such as flexible expansion joints, slip joints, horizontal offsets with ball joints, or multiple bell and spigot gasketed fittings. For structurally supported slabs, suspend piping from the structure with adequate space provided below the pipe for the anticipated soil movement.

5.6.3. HOT WATER SYSTEMS: For Hot Water heating and supply, provide a minimum temp of 140 Deg F in the storage tank and a maximum of 110 Deg F at the fixture, unless specific appliances or equipment specifically require higher temperature water supply.

5.6.4. SIZING HOT WATER SYSTEMS: Unless otherwise specified or directed in paragraph 3, design in accordance with ASHRAE Handbook Series (appropriate Chapters), ASHRAE Standard 90.1, and the energy conservation requirements of the contract. Size and place equipment so that it is easily accessible and removable for repair or replacement.

5.6.5. JANITOR CLOSETS: In janitor spaces/room/closets, provide at minimum, a service sink with heavy duty shelf and wall hung mop and broom rack(s).

5.6.6. FLOOR DRAINS: As a minimum, provide floor drains in mechanical rooms and areas, janitor spaces/rooms/closets and any other area that requires drainage from fixtures or equipment, drain downs, condensate, as necessary.

5.6.7. URINALS: Urinals shall be water-use type, conforming to ASHRAE Standard 189.1 (0.5 gpf/1.9 lpf).

5.6.8. BUILDING WATER USE REDUCTION. Reduce building potable water use in each building 30 percent from the Baseline, using the Manufacturing Performance Requirements for .Plumbing Fixtures

from the Energy Policy Act of 1992 (Public Law 102-486), except as modified by LEED. See Appendix S. Public lavatory faucets shall deliver a maximum flow rate of 0.5 gallons per minute, when tested in accordance with ASME A 112.18/CSA B125 and use that flowrate as the Baseline figure for calculating the 30 percent reduction requirement from the Baseline.

5.6.9. Do not use engineered vent or Sovent® type drainage systems.

5.6.10. Where the seasonal design temperature of the cold water entering a building is below the seasonal design dew point of the indoor ambient air, and where condensate drip will cause damage or create a hazard, insulate plumbing piping with a vapor barrier type of insulation to prevent condensation. Do not locate water or drainage piping over electrical wiring or equipment unless adequate protection against water (including condensation) damage is provided. Insulation alone is not adequate protection against condensation. Follow ASHRAE Fundamentals Chapter 23, Insulation for Mechanical Systems, IMC paragraph 1107 and International Energy Conservation Code for pipe insulation requirements.

5.6.11. Cover all drain, waste and vent piping to prevent mortar or other debris from being flushed down and blocking pipes during such construction activities.

## 5.7. ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

5.7.1. STANDARDS AND CODES: The electrical systems for all facilities shall conform to APPLICABLE CRITERIA.

5.7.2. MATERIALS AND EQUIPMENT: Materials, equipment and devices shall, as a minimum, meet the requirements of Underwriters Laboratories (UL) where UL standards are established for those items. Wiring for branch circuits shall be copper. Motors larger than one-half horsepower shall be three phase. All electrical systems shall be pre-wired and fully operational unless otherwise indicated. Wall mounted electrical devices (power receptacles, communication outlets and CATV outlets) shall have matching colors, mounting heights and faceplates.

5.7.3. POWER SERVICE: Primary service from the base electrical distribution system to the pad-mounted transformer and secondary service from the transformer to the building service electrical equipment room shall be underground. See paragraph 6 for additional site electrical requirements.

5.7.3.1. Spare Capacity: Provide 10% space for future circuit breakers in all panelboards serving residential areas of buildings and 15% spaces in all other panelboards.

5.7.4. TELECOMMUNICATION SERVICE: Connect the project's facilities to the Installation telecommunications (voice and data) system through the outside plant (OSP) telecommunications underground infrastructure cabling system per the I3A Criteria. Connect to the OSP cabling system from each facility main cross connect located in the telecommunications room.

5.7.5. LIGHTING: Comply with the recommendations of the Illumination Engineering Society of North America (IESNA), the National Energy Policy Act and Energy Star requirements for lighting products..

### 5.7.5.1. Interior Lighting:

(a) Reflective Surfaces: Coordinate interior architectural space surfaces and colors with the lighting systems to provide the most energy-efficient workable combinations.

(b) High Efficiency Fluorescent Lighting: Utilize NEMA premium electronic ballasts and energy efficient fluorescent lamps with a Correlated Color Temperature (CCT) of 4100K. Linear fluorescent and compact fluorescent fixtures shall have a Color Rendering Index of (CRI) of 87 or higher. Fluorescent lamps shall be the low mercury type qualifying as non-hazardous waste upon disposal. Do not use surface mounted fixtures on acoustical tile ceilings. Provide an un-switched fixture with emergency ballast at each entrance to the building.

(c) Solid State Lighting: Fixtures shall provide lighting with a minimum Correlated Color Temperature (CCT) of 4100K and shall have a Color Rendering Index of (CRI) of 75 or higher. Verify performance of the light producing solid state components by a test report in compliance with the requirements of IESNA LM 80. Verify performance of the solid state light fixtures by a test report in compliance with the requirements of IESNA LM 79. Provide lab results by a NVLAP certified laboratory. The light producing solid state components and drivers shall have a life expectancy of 50,000 operating hours while maintaining at least 70% of original illumination level. Provide a complete five year warranty for fixtures.

(d) Metal Halide Lighting (where applicable): Metal Halide lamp fixtures in the range of 150-500 Watts shall be pulse start type and have a minimum efficiency rating of 88%.

(e) Lighting Controls: ANSI/ASHRAE/IESNA 90.1 has specific lighting controls requirements. See Also Appendix T, Functional Area Lighting Control Strategy.

(f) Exterior Lighting: See paragraph 6.9 for site specific information, if any, on exterior lighting systems. Minimize light pollution and light trespass by not over lighting and use cut-off type exterior luminaries.

5.7.6. TELECOMMUNICATION SYSTEM: Building telecommunications cabling systems (BCS) and OSP telecommunications cabling system shall conform to APPLICABLE CRITERIA, including but not limited to I3A Technical Criteria. An acceptable BCS encompasses, but is not limited to, copper and fiber optic (FO) entrance cable, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, workstation outlets, racks, cable management, patch panels, cable tray, cable ladder, conduits, grounding, and labeling.. Items included under OSP infrastructure encompass, but are not limited to, manhole and duct infrastructure, copper cable, fiber optic cable, cross connects, terminations, cable vaults, and copper and FO entrance cable.

5.7.6.1. Design, install, label and test all telecommunications systems in accordance with the I3A Criteria and ANSI/TIA/EIA 568, 569, and 606 standards. A Building Industry Consulting Services International (BICSI) Registered Communications Distribution Designer (RCDD) with at least 2 yrs related experience shall develop and stamp telecommunications design, and prepare the test plan. See paragraph 5.8.2.5 for design of environmental systems for Telecommunications Rooms.

5.7.6.2. The installers assigned to the installation of the telecommunications system or any of its components shall be regularly and professionally engaged in the business of the application, installation and testing of the specified telecommunications systems and equipment. Key personnel; i.e., supervisors and lead installers assigned to the installation of this system or any of its components shall be BICSI Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification for each of the key personnel. In lieu of BICSI certification, supervisors and installers shall have a minimum of 5 years experience in the installation of the specified copper and fiber optic cable and components. They shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products.

5.7.6.3. Perform a comprehensive end to end test of all circuits to include all copper and fiber optic cables upon completion of the BCS and prior to acceptance of the facility. Provide adequate advanced notification to the COR to allow COR and Installation personnel attendance The BCS circuits include but are not limited to all copper and fiber optic(FO) entrance cables, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, and workstation outlets. Test in accordance with ANSI/EIA/TIA 568 standards. Use test instrumentation that meets or exceeds the standard. Submit the official test report to include test procedures, parameters tested, values, discrepancies and corrective actions in electronic format. Test and accomplish all necessary corrective actions to ensure that the government receives a fully operational, standards based, code compliant telecommunications system.

5.7.7. LIGHTNING PROTECTION SYSTEM: Provide a lightning protection system where recommended by the Lightning Risk Assessment of NFPA 780, Annex L.

## 5.8. HEATING, VENTILATING, AND AIR CONDITIONING

5.8.1. STANDARDS AND CODES: The HVAC system shall conform to APPLICABLE CRITERIA.

5.8.2. DESIGN CONDITIONS.

5.8.2.1. Outdoor and indoor design conditions shall be in accordance with UFC 3-410-01FA. Outdoor air and exhaust ventilation requirements for indoor air quality shall be in accordance with ASHRAE 62.1. All Buildings with minimum LEED Silver requirement (or better) will earn LEED Credit EQ 7.1, Thermal Comfort-Design., except where precluded by other project requirements. Where the contract specifies indoor design temperature, airflow, humidity conditions, etc., use those parameters.

5.8.2.2. High Humidity Areas: Design HVAC systems in geographical areas meeting the definition for high humidity in UFC 3-410-01FA to comply with the special criteria therein for humid areas.

5.8.2.3. Cooling equipment may be oversized by up to 15 percent to account for recovery from night setback. Heating equipment may be oversized by up to 30 percent to account for recovery from night setback. Design single zone systems and multi-zone systems to maintain an indoor design condition of 50% relative humidity for cooling only. For heating only where the indoor relative humidity is expected to fall below 20% for extended periods, add humidification to increase the indoor relative humidity to 30%. Provide ventilation air from a separate dedicated air handling unit (DOAU) for facilities using multiple single zone fan-coil type HVAC systems. Do not condition outside air through fan coil units. In Air handlers that handle outdoor air and have fans that run continuously during the occupied mode, direct expansion cooling coils may be used only if the controls and compressor technology is provided that allows the compressor to operate down to 10% of full load without utilizing hot gas bypass to minimize the potential of delivering unconditioned outdoor air to the space.

5.8.2.4. Locate all equipment so that service, adjustment and replacement of controls or internal components are readily accessible for easy maintenance.

5.8.2.5. Environmental Requirements for Telecommunications Rooms and Telecommunications Equipment Rooms, (including SIPRNET ROOMS, where applicable for specific facility type). Comply with ANSI/EIA/TIA 569 (including applicable Addenda). Maintain environmental conditions at the Class 1 and 2 Recommended Operating Environment. Before being introduced into the room, filter and pre-condition outside air to remove particles with the minimum MERV filtration quality shown in the ASHRAE HVAC Applications, Chapter 17. Maintain rooms under positive pressure relative to surrounding spaces. Design computer room air conditioning units specifically for telecommunications room applications. Build and test units in accordance with the requirements of ANSI/ASHRAE Standard 127. A complete air handling system shall provide ventilation, air filtration, cooling and dehumidification, humidification (as determined during the design phase), and heating. The system shall be independent of other facility HVAC systems and shall be required year round.

5.8.2.6. Fire dampers: dynamic type with a dynamic rating suitable for the maximum air velocity and pressure differential to which the damper is subjected. Test each fire damper with the air handling and distribution system running.

5.8.3. BUILDING AUTOMATION SYSTEM. Provide a Building Automation System (BAS), consisting of a building control network as specified.

The building control network shall be a single complete non-proprietary Direct Digital Control (DDC) system for control of all the heating, ventilating and air conditioning (HVAC) systems and for control of other building systems. The building control network shall be an Open implementation of LONWORKS® technology using ANSI/EIA 709.1B as the only communications protocol and use only LonMark Standard Network Variable Types (SNVTs), as defined in the LonMark® Resource Files, for communication between DDC Hardware devices to allow multi-vendor interoperability.

5.8.3.1. The building automation system shall be open in that it is designed and installed such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without further dependence on the original Contractor. This includes, but is not limited to the following:

- (a) Install hardware such that individual control equipment can be replaced by similar control equipment from other equipment manufacturers with no loss of system functionality.
- (b) Necessary documentation (including rights to documentation and data), configuration information, configuration tools, programs, drivers, and other software shall be licensed to and otherwise remain with the Government such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without subsequent or future dependence on the Contractor.

5.8.3.2. All DDC Hardware shall:

- (a) Be connected to a TP/FT-10 ANSI/EIA 709.3 control network.
- (b) Communicate over the control network via ANSI/EIA 709.1B exclusively.
- (c) Communicate with other DDC hardware using only SNVTs
- (d) Conform to the LonMark® Interoperability Guidelines.
- (e) Be locally powered; link power (over the control network) is not acceptable.
- (f) Be fully configurable via standard or user-defined configuration parameter types (SCPT or UCPT), standard network variable type (SNVT) network configuration inputs (*nci*), or hardware settings on the controller itself to support the application. All settings and parameters used by the application shall be configurable via standard or user-defined configuration parameter types (SCPT or UCPT), standard network variable type (SNVT) network configuration inputs (*nci*), or hardware settings on the controller itself
- (g) Provide input and output SNVTs required to support monitoring and control (including but not limited to scheduling, alarming, trending and overrides) of the application. Required SNVTs include but are not limited to: SNVT outputs for all hardware I/O, SNVT outputs for all setpoints and SNVT inputs for override of setpoints.
- (h) To the greatest extent practical, not rely on the control network to perform the application.
- (i) Provide on board nonvolatile memory for devices accumulating energy consumption.

5.8.3.3. Controllers shall be Application Specific Controllers whenever an ASC suitable for the application exists. When an ASC suitable for the application does not exist use programmable controllers or multiple application specific controllers.

5.8.3.4. Application Specific Controllers shall be LonMark Certified whenever a LonMark Certified ASC suitable for the application exists. For example, VAV controllers must be LonMark certified.

5.8.3.5. Application Specific Controllers (ASCs) shall be configurable via an LNS plug-in whenever t an ASC with an LNS plug-in suitable for the application exists.

5.8.3.6. Each scheduled system shall accept a network variable of type SNVT\_occupancy and shall use this network variable to determine the occupancy mode. If the system has not received a value to this network variable for more than 60 minutes it shall default to the occupied mode.

5.8.3.7. Gateways may be used provided that each gateway communicates with and performs protocol translation for control hardware controlling one and only one package unit.

5.8.3.8. Not Used

5.8.3.9. Not Used

5.8.3.10. Provide the following to the Government for review prior to acceptance of the system:

- The latest version of all software and user manuals required to program, configure and operate the system.
- Points Schedule drawing that shows every DDC Hardware device. The Points Schedule shall contain the following information as a minimum:
  - Device address and NodeID.
  - Input and Output SNVTs including SNVT Name, Type and Description.
  - Hardware I/O, including Type (AI, AO, BI, BO) and Description.
  - Alarm information including alarm limits and SNVT information.
  - Supervisory control information including SNVTs for trending and overrides.
  - Configuration parameters (for devices without LNS plug-ins) Example Points Schedules are available at <https://eko.usace.army.mil/fa/besc/>
- Riser diagram of the network showing all network cabling and hardware. Label hardware with ANSI.CEA-709.1 addresses.
- Control System Schematic diagram and Sequence of Operation for each HVAC system.
- Operation and Maintenance Instructions including procedures for system start-up, operation and shut-down, a routine maintenance checklist, and a qualified service organization list.
- LONWORKS® Network Services (LNS®) database for the completed system.
- Quality Control (QC) checklist (below) completed by the Contractor's Chief Quality Control (QC) Representative

**Table 5-1: QC Checklist**

5.8.3.11. Perform a Performance Verification Test (PVT) under Government supervision prior to system acceptance. During the PVT demonstrate that the system performs as specified, including but not limited to demonstrating that the system is Open and correctly performs the Sequences of Operation.

5.8.3.12. Provide a 1 year unconditional warranty on the installed system and on all service call work. The warranty shall include labor and material necessary to restore the equipment involved in the initial service call to a fully operable condition.

5.8.3.13. Provide training at the project site on the installed building system. Upon completion of this training each student, using appropriate documentation, should be able to start the system, operate the system, recover the system after a failure, perform routine maintenance and describe the specific hardware, architecture and operation of the system.

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5.8.4. TESTING, ADJUSTING AND BALANCING. Test and balance air and hydronic systems, using a firm certified for testing and balancing by the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or the Testing Adjusting, and Balancing Bureau (TABB). The prime contractor shall hire the TAB firm directly, not through a subcontractor. Perform TAB in accordance with the requirements of the standard under which the TAB Firm's qualifications are approved, i.e., AABC MN-1, NEBB TABES, or SMACNA HVACTAB unless otherwise specified herein. All recommendations and suggested practices contained in the TAB Standard shall be considered mandatory. Use the provisions of the TAB Standard, including checklists, report forms, etc., as nearly as practicable to satisfy the Contract requirements. Use the TAB Standard for all aspects of TAB, including qualifications for the TAB Firm and Specialist and calibration of TAB instruments. Where the instrument manufacturer calibration recommendations are more stringent than those listed in the TAB Standard, adhere to the manufacturer's recommendations. All quality assurance provisions of the TAB Standard such as performance guarantees shall be part of this contract. For systems or system components not covered in the TAB Standard, the TAB Specialist shall develop TAB procedures. Where new procedures, requirements, etc., applicable to the Contract requirements have been published or adopted by the body responsible for the TAB Standard used (AABC, NEBB, or TABB), the requirements and recommendations contained in these procedures and requirements are mandatory.

5.8.5. COMMISSIONING: Commission all HVAC systems and equipment, including controls, and all systems requiring commissioning for LEED Enhanced commissioning, in accordance with ASHRAE Guideline 1.1, ASHRAE Guideline 0 and LEED. Do not use the sampling techniques discussed in ASHRAE Guideline 1.1 and in ASHRAE Guideline 0. Commission 100% of the HVAC controls and equipment. Hire the Commissioning Authority (CxA), certified as a CxA by AABC, NEBB, or TABB, as described in Guideline 1.1. The CxA will be an independent subcontractor and not an employee of the Contractor nor an employee or subcontractor of any other subcontractor on this project, including the design professionals (i.e., the DOR or their firm(s)). The CxA will communicate and report directly to the Government in execution of commissioning activities. The Contracting Officer's Representative will act as the Owner's representative in performance of duties spelled out under OWNER in Annex F of ASHRAE Guideline 0. Because required CxA contractual relationship may not be acceptable to GBCI for LEED certification, the project cannot earn LEED Credit EA3 Enhanced Commissioning. However, still complete, maintain and provide copies of all necessary LEED documentation for Credit EA 3. This LEED Credit cannot be included to meet the required LEED rating for this project. Contractor may attempt this as an additional credit for GBCI certification but the Government will not accept it until GBCI accepts it.

## 5.9. ENERGY CONSERVATION

5.9.1. The building including the building envelope, HVAC systems, service water heating, power, and lighting systems shall meet the Mandatory Provisions and the Prescriptive Path requirements of ASHRAE 90.1. Substantiation requirements are defined in Section 01 33 16, Design After Award.

5.9.2. Design all building systems and elements to meet the minimum requirements of ANSI/ASHRAE/IESNA 90.1. Design the buildings, including the building envelope, HVAC systems, service water heating, power, and lighting systems to achieve an energy consumption that is at least 40% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1. Energy calculation methodologies and substantiation requirements are defined in Section 01 33 16, Design After Award.

5.9.3. Purchase Energy Star products, except use FEMP designated products where FEMP is applicable to the type product. The term "Energy Star product" means a product that is rated for energy efficiency under an Energy Star program. The term "FEMP designated product" means a product that is designated under the Federal Energy Management Program of the Department of Energy as being among the highest 25 percent of equivalent products for energy efficiency. When selecting integral sized electric motors, choose NEMA PREMIUM type motors that conform to NEMA MG 1, minimum Class F insulation system. Motors with efficiencies lower than the NEMA PREMIUM standard may only be used in unique applications that require a high constant torque speed ratio (e.g., inverter duty or vector duty type motors that conform to NEMA MG 1, Part 30 or Part 31).

5.9.4. Solar Hot Water Heating. Provide at least 30% of the domestic hot water requirements through solar heating methodologies, unless the results of a Life Cycle Cost Analysis (LCCA) developed utilizing the Building Life Cycle Cost Program (BLCC) which demonstrates that the solar hot water system is not life cycle cost effective in comparison with other hot water heating systems. The type of system will be established during the contract or task order competition and award phase, including submission of an LCCA for government evaluation to justify non-selection of solar hot water heating. The LCCA uses a study period of 25 years and the Appendix K utility cost information. The LCCA shall include life cycle cost comparisons to a baseline system to provide domestic hot water without solar components, analyzing at least two different methodologies for providing solar hot water to compare against the baseline system.

5.9.5. Process Water Conservation. When potable water is used to improve a building's energy efficiency, employ lifecycle cost effective water conservation measures, except where precluded by other project requirements.



5.9.6. Renewable Energy Features. The Government's goal is to implement on-site renewable energy generation for Government use when lifecycle cost effective. See Paragraph 6, PROJECT SPECIFIC REQUIREMENTS for renewable energy requirements for this project.

#### 5.10. FIRE PROTECTION

5.10.1. STANDARDS AND CODES Provide the fire protection system conforming to APPLICABLE CRITERIA.

5.10.2. Inspect and test all fire suppression equipment and systems, fire pumps, fire alarm and detection systems and mass notification systems in accordance with the applicable NFPA standards. The fire protection engineer of record shall witness final tests. The fire protection engineer of record shall certify that the equipment and systems are fully operational and meet the contract requirements. Two weeks prior to each final test, the contractor shall notify, in writing, the installation fire department and the installation public work representative of the test and invite them to witness the test.

5.10.3. Fire Extinguisher Cabinets: Provide fire extinguisher cabinets and locations for hanging portable fire extinguishers in accordance with NFPA 10 Standard for Portable Fire Extinguishers. The Government will furnish and install portable fire extinguishers, which are personal property, not real property installed equipment.

5.10.4. Fire alarm and detection system: Required fire alarm and detection systems shall be the addressable type. Fire alarm initiating devices, such as smoke detectors, heat detectors and manual pull stations shall be addressable. When the system is in alarm condition, the system shall annunciate the type and location of each alarm initiating device. Sprinkler water flow alarms shall be zoned by building and by floor. Supervisory alarm initiating devices, such as valve supervisory switches, fire pump running alarm, low-air pressure on dry sprinkler system, etc. shall be zoned by type and by room location.

5.10.5. Roof Access: Paragraph 2-9 of UFC 3-600-01 Fire Protection for Facilities will be modified in the next update to that UFC. Pending revision, comply with roof access and stairway requirements in accordance with the International Building Code. Where roof access is required by the IBC or other criteria, comply with UFC 4-010-01, Anti-Terrorist Force Protection, Standard 14. "Roof Access".

5.10.6. Fire Protection Engineer Qualifications: In accordance with UFC 3-600-01, FIRE PROTECTION ENGINEERING FOR FACILITIES, the fire protection engineer of record shall be a registered professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the National Council of Examiners for Engineering and Surveys (NCEES), or a registered P.E. in a related engineering discipline with a minimum of 5 years experience, dedicated to fire protection engineering that can be verified with documentation.

#### 5.11. SUSTAINABLE DESIGN

5.11.1. STANDARDS AND CODES: Sustainable design shall conform to APPLICABLE CRITERIA. See paragraph 6, PROJECT-SPECIFIC REQUIREMENTS for which version of LEED applies to this project. The LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects (AGMBC) applies to all projects. Averaging may be used for LEED compliance as permitted by the AGMBC but is restricted to only those buildings included in this project. Each building must individually comply with the requirements of paragraphs ENERGY CONSERVATION and BUILDING WATER USE REDUCTION.

5.11.2. LEED RATING, REGISTRATION, VALIDATION AND CERTIFICATION: See Paragraph PROJECT-SPECIFIC REQUIREMENTS for project minimum LEED rating/achievement level, for facilities that are exempt from the minimum LEED rating, for LEED registration and LEED certification requirements and for other project-specific information and requirements.

5.11.2.1. Innovation and Design Credits. LEED Innovation and Design (ID) credits are acceptable only if they are supported by formal written approval by GBCI (either published in USGBC Innovation and Design Credit Catalog or accompanied by a formal ruling from GBCI). LEED ID credits that require any Owner actions or commitments are acceptable only when Owner commitment is indicated in paragraph PROJECT-SPECIFIC REQUIREMENTS or Appendix LEED Project Credit Guidance

5.11.3. OPTIMIZE ENERGY PERFORMANCE. : Project must earn, as a minimum, the points associated with compliance with paragraph ENERGY CONSERVATION. LEED documentation differs from documentation requirements for paragraph ENERGY CONSERVATION and both must be provided. For LEED-NC v2.2 projects you may substitute ASHRAE 90.1 2007 Appendix G in its entirety for ASHRAE 90.1 2004 in accordance with USGBC Credit Interpretation Ruling dated 4/23/2008.

5.11.4. COMMISSIONING. See paragraph 5.8.5 COMMISSIONING for commissioning requirements. USACE templates for the required Basis of Design document and Commissioning Plan documents are available at <http://en.sas.usace.army.mil> (click on USACE LEED Commissioning Plan Template) and may be used at Contractor's option.

5.11.5. DAYLIGHTING. Except where precluded by other project requirements, do the following in at least 75 percent of all spaces occupied for critical visual tasks: achieve a 2 percent glazing factor (calculated in accordance with LEED NC version 2.2 credit EQ8.1) OR earn LEED Daylighting credit, provide appropriate glare control and provide either automatic dimming controls or occupant-accessible manual lighting controls.

5.11.6. LOW-EMITTING MATERIALS. Except where precluded by other project requirements, use materials with low pollutant emissions, including but not limited to composite wood products, adhesives, sealants, interior paints and finishes, carpet systems and furnishings,

5.11.7. CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT. Except where precluded by other project requirements, earn LEED credit EQ 3.1 Construction IAQ Management Plan, During Construction and credit EQ 3.2 Construction IAQ Management Plan, Before Occupancy.

5.11.8. RECYCLED CONTENT. In addition to complying with section RECYCLED/RECOVERED MATERIALS, earn LEED credit MR4.1, Recycled Content, 10 percent except where precluded by other project requirements.

5.11.9. BIOBASED AND ENVIRONMENTALLY PREFERABLE PRODUCTS. Except where precluded by other project requirements, use materials with biobased content, materials with rapidly renewable content, FSC certified wood products and products that have a lesser or reduced effect on human health and the environment over their lifecycle to the maximum extent practicable.

5.11.10. FEDERAL BIOBASED PRODUCTS PREFERRED PROCUREMENT PROGRAM (FB4P). The Farm Security and Rural Investment Act (FSRIA) of 2002 required the U.S. Department of Agriculture (USDA) to create procurement preferences for biobased products that are applicable to all federal procurement (to designate products for biobased content). For all designated products that are used in this project, meet USDA biobased content rules for them except use of a designated product with USDA biobased content is not required if the biobased product (a) is not available within a reasonable time, (b) fails to meet performance standard or (c) is available only at an unreasonable price. For biobased content product designations, see <http://www.biopreferred.gov/ProposedAndFinalItemDesignations.aspx>.

5.12. CONSTRUCTION AND DEMOLITION (C&D) WASTE MANAGEMENT: Achievement of 50% diversion, by weight, of all non-hazardous C&D waste debris is required. Reuse of excess soils, recycling of vegetation, alternative daily cover, and wood to energy are not considered diversion in this context, however the Contractor must track and report it. A waste management plan and waste diversion reports are required, as detailed in Section 01 57 20.00 10, ENVIRONMENTAL PROTECTION.

5.13. SECURITY (ANTI-TERRORISM STANDARDS): Unless otherwise specified in Project Specific Requirements, only the minimum protective measures as specified by the current Department of Defense Minimum Antiterrorism Standards for Buildings, UFC 4-010-01, are required for this project. The element of those standards that has the most significant impact on project planning is providing protection against explosives effects. That protection can either be achieved using conventional construction (including specific window requirements) in conjunction with establishing relatively large standoff distances to parking, roadways, and installation perimeters or through building hardening, which will allow lesser standoff distances. Even with the latter, the minimum standoff distances cannot be encroached upon. These setbacks will establish the maximum buildable area. All standards in Appendix B of UFC 4-010-01 must be followed and as many of the recommendations in Appendix C that can reasonably be accommodated should be included. The facility requirements listed in these specifications assume that the minimum standoff distances can be met, permitting conventional construction. Lesser standoff distances (with specific minimums) are not desired, however can be provided, but will require structural hardening for the building. See Project Specific Requirements for project specific siting constraints. The following list highlights the major points but the detailed requirements as presented in Appendix B of UFC 4-010-01 must be followed.

- (a) Standoff distance from roads, parking and installation perimeter; and/or structural blast mitigation
- (b) Blast resistant windows and skylights, including glazing, frames, anchors, and supports
- (c) Progressive collapse resistance for all facilities 3 stories or higher. Unless determined otherwise by the Installation and noted in paragraphs 3 or 6, the building shall be considered to have areas of uncontrolled public access when designing for progressive collapse.
- (d) Mass notification system (shall also conform to UFC 4-021-01, Mass Notification Systems)
- (e) For facilities with mailrooms (see paragraph 3 for applicability) – mailrooms have separate HVAC systems and are sealed from rest of building

## 6.0 PROJECT SPECIFIC REQUIREMENTS

### 6.1. GENERAL

The requirements of this paragraph augment the requirements indicated in Paragraphs 3 through 5.

### 6.2. APPROVED DEVIATIONS

The following are approved deviations from the requirements stated in Paragraphs 3 through 5 that only apply to this project.

- a. Modular type construction in this geographic region is an unacceptable method of construction at Fort Polk.
- b. Due to termite issues, wood framing construction is unacceptable at Fort Polk.
- c. Remove Radiant Heating elements at each vehicle bay door as suggested in 01 10 00 Paragraph 3.2, Betterments.
- d. Clarify that Section 01 10 00 Paragraph 3.2.5 refers to Government Furnished Contractor Installed equipment. See Appendix JJ for information, and Appendix J for layout of equipment.

#### (AM003)

~~e. Demolition of Old Fire Station complex, as shown on sheet C-102 of Appendix J will be required before contract completion. Demolition cannot commence until 1 month after final completion of the new fire station (1 month move-in time). Refer to Section 00 73 10, paragraph 1.2 for phasing the demolition of old fire station complex.~~

e. Section 5.1.2.3. The successful offeror must work with the Post to ensure the final design complies with ATPF Requirements at the two service drives. It is the desire of the post to provide "temporary, manual means" to comply with higher FPCON levels of protection across the Emergency Vehicle Access Road on both Mississippi Avenue and Louisiana Avenue in lieu of permanent measures, such as bollards or swing gates.

f. Add the following to Section 5.12 Construction and Demolition (C&D) Waste Management

Demolishing of existing buildings that contain asbestos or lead paint materials requires coordination and approval by State of Louisiana. The Contractor shall obtain the necessary permits and approvals through the State of Louisiana prior to performing demolition of existing building that contain asbestos or lead paint. Prior to demolition of existing building, the Contractor shall meet compliance with State requirements for testing, abatement planning, disposal and record keeping of debris and building materials that contain hazardous substances.

#### (/AM003)

### 6.3. SITE PLANNING AND DESIGN

#### 6.3.1. General:

The Ft Polk Installation Design Guide (IDG) is referenced in part in the below paragraphs. The Contractor will comply with the Ft Polk IDG even when not specifically referenced. In the event of any inconsistency, the Contractor will request and abide by clarification provided by the COR.

6.3.1.1. Project Location. The new Fire Station will be located at the southwest corner of the intersection of Louisiana Avenue and Mississippi Avenue. See Appendix J for Access and Haul Route Map.

a. Installation Access – All contractor personnel requiring access to Fort Polk must be on an access roster. These rosters are used by base personnel to verify legitimate need for contractors requiring access to the Installation. The Prime Contractor must provide a list of employees requiring access to our office not-to-exceed 180 days (Primes are responsible for submitting subcontractor info). Include names, social security numbers, company name (if subcontractor employee), contract number, Date which access is to begin, Date which access is to end, and a Ft Polk point of contact. Refer to Appendix LL for more info and example of Access Control Roster. Changes to add or remove employees from the list must be submitted daily. Should both additions and deletions need to be submitted on one day, both can be submitted on same document, as long as it is annotated and segregated as such. In addition – a complete updated roster must be submitted to our office monthly by the 5th of each month. Indicate key personnel that require a 6 month pass with an \* (asterisk) at the beginning of their name. Rosters will be submitted by email to the following addresses: [HYPERLINK "mailto:Penelope.Z.Smith@usace.army.mil"](mailto:Penelope.Z.Smith@usace.army.mil) Penelope.Z.Smith@usace.army.mil (AM0003) cc: ~~HYPERLINK "mailto:Jovette.Graham@usace.army.mil"~~ Jovette.Graham@usace.army.mil (/AM0003) In order for a submitted access control roster to be accepted all data must be filled in on the roster. Adjustments or changes to the supplied access roster and or omission will result in the access roster being rejected. Any organizations submitting electronic access control rosters are required to provide personnel listed on the roster with a copy of Privacy Act in Appendix LL. Rosters should be submitted 5 days in advance of access to allow time to consolidate the new information in data base and validate each roster.

Once employees are on the roster, they may gain access by one of two ways – Enrollment in the RAPIDGate Program which will require a standardized background check, identification badge and entry procedures that improve security. There is an annual enrollment fee for the sponsor company, plus the cost to enroll each employee. For further information concerning the RAPIDGate Program, call 1-877-727-4342. Personnel that have Rapid Gate badges do not have to be continually listed on the access roster. If you choose not to enroll in this Program, you will be required to get a temporary pass at the Visitors' Center located by Access Control Point #1 on Louisiana Avenue. This pass may be extended up to 2 weeks by going to Building 1830, but access may be limited to certain gates. For further information call 531-0380, Consolidated In and Out Processing, Building 1830. Reminder – before you can obtain any kind of entry to Fort Polk you must be on an access roster on file with our office.

6.3.1.2. New Site Design and Construction. The concept site plan in Appendix J presents an example layout for the site work. The Contractor shall design the drainage, sidewalks, landscaping, site grading, outdoor activity spaces, access drives, bus access, staff parking, patron parking, concrete curbs and gutters, and utilities (including fire hydrants and area lighting) for the Fire Station. Contractor shall show limits of construction on the design drawings.

6.3.1.2.1 (AM008) Site Entrances, Turning Lane, Signalization, and Crosswalks. The site shall be designed with three entrances. The entrance off Louisiana Avenue as well as the 30 foot wide access road off Mississippi Avenue shall accommodate front and rear entrances and exits for the emergency vehicles. The entrance off Mississippi Avenue shall accommodate all staff and visitor parking. The contractor shall design a dedicated right hand turn lane from Louisiana Avenue to Mississippi Avenue as a CLIN Option (see Proposed Site Plan in Appendix J) (/AM009)

6.3.1.3. Force Protection. Set back requirements used as the basis for the RFP site plans were determined in accordance with the Department of Defense Unified Facilities Criteria (UFC) 4-010-01 entitled "Minimum Antiterrorism Standards for Buildings". Setback distances of buildings from unrestricted roads, parking, and trash containers shall not be less than 82-feet. Access restricted drives within 33-feet of buildings shall be controlled to prevent unauthorized vehicles from using access roads. The Government reserves the right to review any or all Designer of Record approved submittals for proposed physical barrier types and uses. All facilities under this contract shall comply with the requirements set forth in UFC 4-010-01, requirements set forth by the base, and with the requirements of this RFP.

6.3.1.4. Construction and Waste Management. For any construction that involves demolition within the construction footprint, the Contractor is responsible for demolition, hazardous materials surveys and proper disposal as required by Federal, State, and local statutes, ordinances, agreements and as described in this RFP. At least 50% of all non-hazardous construction, demolition, and land-clearing debris shall be recycled and/or salvaged. Contractor shall develop and implement a construction and waste management plan that, at a minimum, identifies the materials to be diverted from disposal and sorted onsite.

6.3.1.4.1. No phase of work shall impede access for emergency response vehicles and personnel to adjacent facilities. The Fort Polk Fire Department and Military Police shall be notified prior to any road closure and their directives followed.

6.3.1.5. Disposal Area. No landfill to dispose of C&D debris is available on Fort Polk. See Appendix LL for Army Policy of Waste Management for new construction, and Hazardous Waste Management plan.

6.3.1.6. Contractor's Use of Site.

6.3.1.6.1. The Contractor shall coordinate with the Contracting Officer's Representative (COR) for lay-down area, offices, parking, and storage facilities. Lay-down area shall be located within the Project Limits. Any damage to existing structures shall be repaired or replaced to the satisfaction of the COR at no additional cost to the Government. All Contractor POV parking areas shall be coordinated and approved in advance by the COR.

6.3.1.6.2. Construction sites shall be kept neat and free of trash. Construction sites shall be screened from view by a 6 foot high chain link fence with silt fabric attached. The construction fence shall be securely locked after working hours.

6.3.1.6.3. The use of burning at the project site for the disposal of refuse and debris shall not be permitted. All demolition debris shall be disposed of offsite. All costs in connection with disposing of the materials shall be at the Contractor's expense. All liability of any nature resulting from the disposal of the

materials shall be the responsibility of the Contractor. The Contractor shall be responsible for all disposal permits and fees associated with debris disposal.

### 6.3.2. Site Structures and Amenities

#### 6.3.2.1. Parking Areas and Access Drives.

6.3.2.1.1. Parking areas shall be provided similar to the layout shown on site plan in Appendix J. New connections to existing asphalt or concrete pavements shall be accomplished by saw cutting the adjacent existing pavement to a smooth edge. Minimum access drive pavement width for two way traffic shall be 24 feet from edge of pavement to edge of pavement. The Contractor shall consider the types of vehicles traversing and parking on these facilities, and shall incorporate their requirements in the site design. Contractor shall provide traffic control signs and pavement markings. All signage and markings shall be in accordance with Fort Polk IDG and Manual on Uniform Traffic Control Devices, Federal Highway Administration.

6.3.2.1.2. Parking areas shall be paint striped, have lighting and be adequately drained. Provide accessible parking spaces, sidewalks, and ramps for handicapped individuals in accordance with the Uniform Federal Accessibility Standards (UFAS) FED-STD-795 and the most current Americans with Disabilities Act Accessibility Guidelines (ADAAG). An accessible route meeting ADA and UFAS standards shall be designed and constructed from the building as depicted on the Proposed Site Plan in Appendix J. The Contractor shall provide 12 inch by 18 inch handicapped parking signs with posts. Handicapped parking signage shall be in accordance with Ft Polk IDG. The parking lots shall be accessed from Mississippi Avenue as indicated on the concept Site Plan provided in Appendix J. Provide raised and striped crosswalks in the parking and drive areas where pedestrians are required to cross vehicle traffic(see Proposed Site Plan in Appendix J). Refer to the Standard Design Criteria for Fire Stations in Para 3 of this section for required minimum staff and patron parking spaces. Accessible spaces are accounted for in the required parking spaces. The parking spaces shall not be angled. As per Standard Design Criteria, staff parking spaces shall be 9 feet wide and 18 feet long, while patron parking spaces shall be 10 feet wide and 18 feet long.

6.3.2.1.3. Pavement Markings. Pavement markings shall be required for the drives and parking area. Marking stripes shall be 4 inches wide. Parking stripes shall be white and handicapped parking stripes shall be blue. Equipment used for marking streets shall be capable of placing the prescribed number of lines at a single pass as solid lines, intermittent lines or a combination of solid and intermittent lines using a maximum of two different colors of paint. When mobile units are used to place thermoplastic material, the mobile unit shall be equipped with a spray gun system. Materials proposed for use shall be sampled and tested. Testing shall be performed in an approved independent laboratory and reports shall be furnished by the Contractor.

6.3.2.1.4. Parking lot drainage shall be designed to provide positive drainage and avoid concentrating flows. The slopes of the surface shall be held to the minimum required for drainage and to prevent ponding, but shall not be less than 1%. For safety, the maximum slope for parking shall be 5% along the isles through the parking area and 1.5% for the transverse slope. The Contractor shall construct the new drainage system such that parking areas and paved areas adjacent to the new facility drain adequately with water flowing away from the new facilities. The drainage system shall be designed to carry storm

water away from the new facilities. The Contractor shall develop a storm drain/grading plan that will incorporate/include the off-site storm water runoff.

6.3.2.1.5. Contractor proposed changes to the layout design of the parking lot shall conform to AASHTO standards. The Contractor shall ensure that the layout for the entire site and access drives shall accommodate emergency and fire fighting vehicles, and are in accordance with NFPA 1 Uniform Fire Code. The fire truck route's inside and outside turning radii shall be a minimum of 22 feet and 55 feet, respectively. Additional design vehicles shall include, but shall not be limited to, passenger cars, emergency vehicles, busses, and utility vehicles. The drives and the parking lot traffic aisle shall be a minimum of 24 feet to provide two way movement.

6.3.2.1.6. The parking lots and access drives to the parking lots shall be paved and shall have concrete curb and gutter where needed for AFTP, otherwise curb cuts to facilitate non-concentrated storm water flow are preferred. Curbs shall be depressed at driveways and intersections for access by the handicapped. All curb and gutter shall be 12 inch by 24 inch. Curb shall be 6 inches wide, 6 inches above grade, and 6 inches below grade. The gutter shall be an 18 inch gutter sloped 1 inch from pavement edge to face of curb. Bumper curbs are not required at parking stalls unless there is no curb in front of the stall, such as handicapped stalls. Islands located in the parking lot may also have curb and gutter, curb cuts or bumper curbs. Mountable curbs shall be installed for vehicular access to drivable sidewalks, as necessary.

6.3.2.2. Dumpster. A new concrete dumpster pad and enclosure are required. Pad shall be reinforced concrete. The dumpster enclosure design should utilize the same building materials and characteristics as the adjacent buildings. Dumpster locations shall conform to Department of Defense Force Protection Construction Standards. The minimum size for a dumpster pad shall accommodate two dumpsters, one for trash and one for recyclables and it shall be in accordance with the Fort Polk IDG. The approach to the dumpster shall be reinforced concrete and large enough to encompass bearing points of trash disposal vehicle.

6.3.2.3 Mechanical Yard. Mechanical yard shall be enclosed with concrete pads for equipment. Pads shall be reinforced concrete. The enclosure design should utilize the same building materials and characteristics as the adjacent buildings and screen walls will have open "L" configuration. Mechanical yard location shall conform to Department of Defense Force Protection Construction Standards and allow for maintenance vehicle access with a 12' wide access drive and swing gate.

6.3.2.4 Retaining walls exceeding four feet in height shall have aluminum handrails and shall be designed and stamped by a registered professional engineer.

6.3.2.5 In addition to fire hydrants on site, two wall hydrants shall be placed on the exterior of the building, adjacent to the apparatus bays for refill of water holding trucks.

6.3.3. Site Functional Requirements:



#### 6.3.3.1. Stormwater Management (SWM) Systems.

6.3.3.1.1. Site plan design shall conform to the applicable requirements of local, state and federal authorities. Site design shall meet the requirements of Section 438 of the Energy Independence and Security Act (EISA). Contractor shall provide a letter from a registered professional engineer that the requirements of Section 438 of EISA have been met. Contractor shall comply with all requirements including provide and maintain their pollution prevention plan. The Contractor shall construct the drainage system such that parking areas and areas adjacent to the new buildings drain adequately. Areas adjacent to the new buildings shall drain with storm water flowing away from the buildings.

6.3.3.1.2. The storm drainage system shall consist of swales, curb cuts, storm drainage structures, and piping, as necessary. All grading shall be completed such that all areas adjacent to the new building drain adequately with storm water flowing away from the facilities. The Contractor shall provide a 8" drop from the finished floor elevation of the new buildings to the adjacent ground. On grassed surfaces adjacent to the buildings, a slope of 5% shall be maintained for a distance of 10 feet. All swale side slopes shall not be steeper than 4 feet horizontal to 1 foot vertical.

6.3.3.1.3. The drainage design documents and drawings shall include erosion and sediment control features as necessary to stabilize disturbed areas, minimize site erosion and to prevent silt laden storm water from leaving the site. The Contractor shall follow current Best Management Practices (BMP) during construction. The stabilization practices to be implemented shall include temporary seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, erosion control mats, protection of trees, preservation of mature vegetation, silt fences, hay bales, sediment traps, etc. as necessary. The Contractor shall record the dates when major grading activities occur, (e.g., clearing and grubbing, excavation, embankment construction, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Stabilization practices shall be initiated as soon as practicable, but no later than 14 days after any portion of the site where construction activities have temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

#### 6.3.3.2. Erosion and Sediment Control

6.3.3.2.1. The Contractor shall prepare an Erosion and Sediment Control Plan (ESPC) plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, and all laws and regulations. The plan shall be submitted to the COR.

6.3.3.2.2. Dust and debris shall be controlled in and around the work area.

6.3.3.2.3. Permits. The Contractor shall obtain all permits including digging, de-watering, erosion control, water, sewer and other applicable permits required by local, state and federal authorities. All permits shall

be obtained prior to any land disturbing activities or utility connections as prescribed by the respective permit.

6.3.3.2.4. The Contractor shall clearly define the requirements for the ESPC for this project. Site plans shall incorporate designs that control runoff and erosion.

#### 6.3.3.3. Vehicular Circulation.

See sub-paragraphs under 6.3.2.

### 6.4. SITE ENGINEERING

#### 6.4.1. Existing Topographical Conditions

6.4.1.1. The D/B Contractor shall clear and grub the site as necessary.

6.4.1.2. Survey. Refer to the preliminary site survey in Appendix J. All topographic survey required to design and construct the facilities under this contract shall be the responsibility of the D/B Contractor. The D/B Contractor shall field verify actual locations of existing utilities and shall coordinate with the Government regarding any utility installations that affect the work under this contract. The D/B Contractor shall survey and stake-out the project boundaries prior to start of work. All survey data shall be submitted (as an Existing Site Plan) for review in accordance with the requirements set forth in Section 01 33 16 DESIGN AFTER AWARD.

6.4.1.3. Site Investigation. All soil borings and geotechnical testing and investigations required to design and construct the facilities under this contract shall be the responsibility of the Contractor. All investigation results shall be submitted for review in accordance with the requirements set forth in Section 01 33 16 DESIGN AFTER AWARD.

6.4.2. Existing Geotechnical conditions: See Appendix A for a preliminary geotechnical report.

Geotechnical Information - See Appendix A

6.4.3. Fire Flow Tests See Appendix D for results of fire flow tests to use for basis of design for fire flow and domestic water supply requirements.

Results of Fire Flow Tests - See Appendix D for Flow Data and Fire Hydrant Location Map.

6.4.4. Pavement Engineering and Traffic Estimates:

6.4.4.1. All asphalt and concrete pavement structures, including drivable sidewalks, shall be in accordance with the Fort Polk IDG. The Government reserves the right to review any or all Designer of Record approved submittals for proposed pavement designs.

6.4.4.2. New Concrete Pedestrian Sidewalks, Ramps, and Landings. Sidewalks, ramps, landings, and curb cuts shall be sized in accordance with criteria outlined in the ADAAG and the UFAS. Sidewalks shall be strictly provided as indicated on the concept site plan. Sidewalks may be widened as necessary to meet building entrance and exit ways. New concrete sidewalks shall be constructed to accommodate handicapped individuals from the accessible parking spaces in the parking lots. Sidewalks shall be constructed of concrete with a minimum compressive strength of 3500 psi and a minimum thickness of 4 inches. When placing concrete during cold weather, mixing water and aggregates shall be heated as necessary to result in the temperature of the in place concrete being between 50 and 85 degrees F. Cross slope on all sidewalks, including forms for sidewalks, shall be 2 percent. The subgrade shall be constructed to the specified grade and cross section prior to concrete placement. In the event that new concrete sidewalks cross drainage swales, the Contractor shall ensure positive drainage with a sidewalk overpass structure. Where sidewalks require handrails, handrail will be fabricated from aluminum.

6.4.4.3. Concrete Joints. Joints shall be provided in the concrete sidewalk to eliminate random cracking. Transverse contraction joints shall be spaced at a distance equal to the sidewalk width or 5 feet on centers, whichever is less, and shall be continuous across the slab. Longitudinal contraction joints shall be constructed along the centerline of all sidewalks 10 feet or more in width. Expansion joints shall be placed at 25 feet on center in sidewalks and at the intersection of walks and curbs, and shall be formed with ½ inch joint filler strips. Where curb and gutter do not abut concrete pavement, expansion joints at least ½ inch in width shall be provided at intervals not exceeding 40 feet in the curb and gutter. The joint opening shall be thoroughly cleaned before the sealing material is placed. Sealing material shall not be spilled on exposed surfaces of the concrete. Concrete at the joint shall be surface dry and atmospheric and concrete temperatures shall be above 50 degrees F at the time of application of joint sealing material. Excess material on the exposed surfaces of the concrete shall be removed immediately and concrete surfaces cleaned.

#### 6.4.5. Traffic Signage and Pavement Markings

Solar powered flashing diamond LDOT approved signs will be placed approximately 100 feet away from emergency vehicle exits. Signage on the road will direct POV parking and staff parking. Emergency Only Exits shall be shown. Traffic signals shall also be designed and provided for this intersection. Crosswalks with flashing lights and push buttons shall be included for pedestrian traffic crossing Louisiana Avenue/ Mississippi Avenue

#### 6.4.6. Base Utility Information

6.4.6.1. The D/B Contractor shall mark actual locations of all underground cables and utilities (communications, water, etc.) prior to start of construction. The Contractor shall use caution around any underground cable or utility to prevent damage. Any damage to existing utility lines shall be repaired or replaced to the satisfaction of the COR at no additional cost to the Government. Existing utilities that interfere with this project shall be relocated after coordination with the COR.

6.4.6.2. The D/B Contractor shall be responsible for all coordination and costs to design and install the utilities from connection points to the new facility. During design, the D/B Contractor shall provide the site

plan, loads, and utility timeline to the Ft Polk DPW through USACE COR. Utility connections will be coordinated with the Ft Polk DPW through USACE COR.

6.4.6.3. Utility Services. The D/B Contractor shall make arrangements for temporary use, connection, and payment for water, gas and electrical utilities with Ft Polk DPW coordinating through USACE COR. Advance deposits for utility connections may be required. The Contractor shall acquire all utility services as required without additional expense to the Government. The D/B Contractor shall be responsible for all connection charges, permits, inspection charges, and relocation charges associated with any and all utility services and shall include the costs thereof in the contract price.

6.4.6.4. Underground Utilities. Copper or other metallic tracer wire shall be used for all new water & sewer lines, force mains, gas lines (natural and LP) and other non-metallic pipe. The tracer wire shall be installed below the pipe and connected from manhole to manhole (or valve, etc.) with enough additional length for the end to reach the ground surface for attachment of energizing equipment. Wire shall enter the manhole so it is not cut or severed during installation. Metallic marking tape shall also be installed at approximately 18-inches below finished grade. Comply with Fort Polk IDG.

6.4.6.5. Design Requirements. No utilities shall be installed under the footprint of the buildings shown on the drawings. Existing utilities shall be rerouted around the footprint of the new buildings if they are within 5 feet of the footprint. All utility connections shall be coordinated through the COR and the Government Operating Contractor (Utility owner if not DPW). The Contractor shall notify the COR before a utility tie-in is required. All sanitary sewer system tie-ins shall be coordinated with the COR and the Government Operating Contractor. It is the Contractor's responsibility to confirm the specific locations and depths of the existing utilities.

6.4.6.6 Communication. Site communications conduit and cable routing will be designed and installed by the D/B contractor from the communications room to existing manhole 62 (splice point). Communications service to the building shall be both fiber optic and copper cables in underground 2-way concrete encased 4 inch conduit ductbank, one 4 inch conduit for the copper cable and one 4 inch conduit for fiber optic cable. Inner duct for the 4 inch fiber optic conduit shall be provided and installed. Provide pull wire in all empty spare inner ducts.

The D/B contractor shall provide and install a 12 strand SM fiber and a 50 pair 24 AWG copper cable from the new facility to existing manhole 62 (splice point), see drawings in Appendix J. Counts to be spliced into will be coordinated with the Installation's Network Enterprise Center (NEC) during construction. D/B Contractor to Engineer, Furnish, Install, and Test (EFI&T) a complete communications system for the new facility. All test results will be provided to the NEC after construction has been completed.

Design shall be in accordance with the Department of the Army Information Systems Engineering Command (ISEC) I3A Technical Guide. One 4 inch conduit shall contain 4-1 inch inner ducts for fiber optic cable and one 4 inch conduit for the copper cable. Provide pull wire in all empty spare conduits and inner ducts. Underground cable splice kits are required for connection to the existing infrastructure

manhole and new manhole nearest to the facility. Provide protector modules for all copper cables. Fiber optic cables shall be terminated on patch panel.

6.4.6.7. Electricity: Power for building shall be provided from the electrical primary service to the building by D/B Contractor. D/B Contractor shall provide pad mounted transformer, electric meter, and associated enclosure/socket. Electric meters shall be located at the transformer. D/B Contractor shall provide final building electrical loads, voltage requirements, and desired service locations to DPW Utilities POC and Entergy prior to finalizing design. D/B Contractor shall also be responsible for all conduit, wiring, and connections from the electrical primary to the building main distribution panel.

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☐ The point of connection for electric service is an existing overhead distribution line running north-south adjacent to the site on the west side of Mississippi Avenue. A new electrical line will run north-south across Louisiana Avenue to service the existing building (see drawings in Appendix J). It is required that the transformer be located a minimum of 33 feet from the facility to comply with ATFP criteria. Ft Polk prefers Shark 200 electrical metering, which can be seen in Appendix CC, or approved equal. Fort Polk's electrical utilities are owned and operated by Entergy. All work done under this contract shall comply with Entergy's Design Guide and Specification found on Entergy's website.

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#### 6.4.6.8. Water Distribution System

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☐ 6.4.6.8.1. Potable water service including meter and a separate fire sprinkler service connection shall be provided to the building by the D/B Contractor. The potable water meter shall be located outside the facility, in a vault. The RPZ and Fire Line Backflow prevention device shall be located in above ground insulated boxes outside the facility as well. Fort Polk's water and wastewater utilities are owned and operated by American Water, Inc. All work done under this contract must comply with the American Water Military Services Group Design Guide for Water and Wastewater Facilities (AW Design Guide); see Appendix II for Hyperlink. Refer to the AW Design Guide for detailed specifications, guidelines, and submittal requirements. Permit Application form can be found in Appendix TT. D/B Contractor shall coordinate design in advance with DPW Utilities POC and with American Water. Advance written approval by American Water is required before construction of water or sanitary sewer system components may begin. D/B Contractor is also responsible for submitting to and getting approval from Louisiana Department of Health and Hospitals (LDHH) and all associated fees. Hyperlink to Louisiana Department of Health and Hospitals Design Summary Forms is included in Appendix II. See Appendix LL for Ft Polk Installation Standard Operating Procedure (Note that this is D/B Contractor responsibility, not Ft Polk DPW).

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☐ Existing potable water lines along the south side of Louisiana Avenue will require relocation and replacement through the extent of the project site. New taps will be off of the new potable water system designed by the contractor. No open cuts will be allowed in the road surface. The water service line shall be installed by boring under the road in accordance with the appropriate industry standards. Ft. Polk prefers Series 909 or Series 994 check valves included in Appendices EE and FF or approved equals.

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☐ 6.4.6.8.2. D/B Contractor shall provide desired service size and location to the DPW Utilities POC, American Water, and COE representatives prior to finalizing design. Contractor shall be responsible for all piping past the meter outlet. D/B Contractor shall provide hot tap and gate valve at water main connection located in valve box with a concrete pad around enclosure. D/B Contractor shall be responsible for connection to the stub and all subsequent items including the Post indicator valve, double detector check valve assembly, vault, and all piping between the service stub and building. Refer to American Water Design Guide in Appendix II for the hyperlink for meter specifications. Ft Polk prefers check valves and metering included in Appendices EE and FF. Check D/B Contractor shall provide backflow preventer on service line to building.

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☐ 6.4.6.8.3. The design of the water distribution mains and service lines shall provide an adequate quantity of water at sufficient pressure for domestic and fire suppression use. Building supply lines shall be sized to meet peak demands with no more than 10 psi pressure loss between the mains and the

buildings. Fire hydrants shall be manufactured in accordance with AWWA C502 and be compatible with existing equipment in use at Fort Polk. Refer to Appendix D for Fire Flow Data in this area.

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☐ 6.4.6.8.4. The Contractor shall obtain flow tests near the new project site to confirm the results of the flow test prior to the start of design. Water flow tests shall be conducted in accordance with NFPA 291 Recommended Practice for Fire Flow Testing and Marking of Hydrants. The Contractor shall flow an adequate number of hydrants to minimize hydraulic inefficiencies during the flow. Raw data and results of the fire flow testing shall be included in the design analysis report with calculations to support water line sizing. Fire flow results shall be indicated graphically. As soon as the test is complete, a flow report shall be provided to the COR. As necessary, retests may be required. The worst case data shall be used for design, unless the retest indicates that one of the other results appears improbable.

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☐ 6.4.6.8.5. Fire Protection Water. The fire protection water mains shall be designed to supply the quantities at sufficient pressure of the fire protection system required by Paragraph "Fire Protection" of this document. The minimum residual pressure for outside fire protection (hose stream demand) is 20 psig. The hose stream demand shall be as per UFC 3-600-01. A hyperlink to UFC for Fire Protection Engineering for Facilities is included in Appendix II. The minimum pressure requirement for the sprinkler system shall be determined during design in accordance with the Paragraph "Fire Protection".

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☐ 6.3.6.8.6. Joint and Thrust Restraint. Joint restraint assembly clamps, tie bolts, and glands shall be ductile iron. Joint restraint assemblies shall be rated for a working pressure of at least 250 psi with a minimum safety factor of 2.0. For AWWA C900 PVC piping restrained push on joints 4" through 12" in diameter, joint restraint assemblies shall have a restraint ring with a serrated holding surface. Joint restraints for PVC pipe shall meet the requirements of ASTM F 1674-96 and shall be manufactured for use on PVC pipe. Restraints shall be UL listed and FM approved. Thrust restraint shall be provided at all tees, plugs, joints, bends deflecting 11.25 degrees or more, either vertically or horizontally, and tapping sleeves on pressurized lines 4" in diameter or larger. Valves shall be securely anchored or shall be provided with thrust restraints to prevent movement. Thrust restraint shall be provided by joint restraint assemblies with concrete thrust blocks or tie rod assemblies with concrete thrust blocks.

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☐ 6.4.6.8.7. Warning Tape and Tracing Wire. Tracing wire shall be provided for non-metallic pipe and shall be 6 AWG pipeline tracing wire with Type TW insulation as approved by the COR. To facilitate tracing, tracer wire shall be brought up to grade at each valve box and riser section (e.g. building entry, fire hydrant, PIV) so the tracing wire can be easily located and connected to. Warning/marketing tape for potable water pipelines shall be blue in color, printed with the words "Potable Water Line Below". Warning/marketing tape does not have to be foil backed.

6.4.6.9.1. The D/B Contractor shall design and build a new sanitary sewer collection system for the new facility. Full design, calculations, & specifications for the Oil/Water Separator, and the Grease Trap shall be submitted for approval of American Water. The sanitary sewer collection system shall be sized to handle the sanitary sewage peak flow from the facility. The system shall be designed so that velocity at peak flow does not exceed 5 fps. Please Note: Fort Polk's water and wastewater utilities are owned and operated by American Water, Inc. All work done under this contract must comply with the American Water Military Services Group Design Guide for Water and Wastewater Facilities (AW Design Guide); a hyperlink to their website is included in Appendix II. Refer to the AW Design Guide for detailed specifications, guidelines, and submittal requirements. D/B Contractor shall coordinate design in advance with DPW Utilities POC and with American Water. Advance written approval by American Water is required before construction of water or sanitary sewer system components may begin.

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☐ The point of connection for sanitary sewer shall be adjacent to and just west of Mississippi Avenue in line with the existing 8" sanitary sewer main. Contractor shall be responsible for the installation of two-way clean outs and all piping between designated point of connection and the building. D/B Contractor shall provide final building sanitary sewer design flow and desired service size, slope and invert elevations to the DPW Utilities POC and COE representatives prior to finalizing design.

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☐ 6.4.6.9.2. Sanitary Manholes. Manholes shall be provided at junctions of gravity sewers and at each

change in pipe direction, size or slope. Manholes shall be constructed of precast reinforced concrete. Manhole sections shall conform to ASTM C 478. Joints shall be cement mortar, approved mastic, rubber gaskets, a combination of these types; or the use of external preformed rubber joint seals and extruded rolls of rubber with mastic adhesive on one side. Free drop inside the manholes shall not exceed 18 inches; drop manholes shall be constructed whenever the free drop would otherwise be greater than 18 inches. Manholes shall not be located in the roadways or parking lots, but in areas that are readily accessible for operation and maintenance purposes. All manholes shall be topped with an eccentric riser section. Manhole steps shall have a minimum length of 16" and be spaced at 12" on center. Steps shall be designed in accordance with OSHA Standard 29 CFR 1910.27.

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□ 6.4.6.9.3. Frames and Covers. The manhole covers shall match those currently in use at Fort Polk in all essential details. Tops of frames and covers shall be set flush with finished grade in paved areas or two inches higher than finished grade in unpaved areas. Frame and cover assemblies shall be sealed to manhole sections using external preformed rubber joint seals that meet the requirements of ASTM D 412 and ASTM D 624. Frames and covers shall meet anticipated vehicle loadings.

□

□ 6.4.6.9.4. Cleanouts. Provide two-way cleanouts at all building connections, 5 feet from the footing.

6.4.6.10. Gas: Natural gas service shall be provided to the building and a meter set by D/B Contractor. D/B Contractor shall provide final gas load and desired service size to the DPW Utilities POC prior to finalizing design. D/B Contractor shall be responsible for all costs and coordination to have the Utility Provider (Centerpoint Energy) run the gas service from the gas main to the regulator or to a point of demarcation, including hot tap and gas valve at connection to gas main.

□ Please Note: The point of connection for gas service to fire station is an existing 4-inch gas main located on the north side of the site. The 4-inch gas line runs east-west parallel to Louisiana Avenue.

□ D/B Contractor will be responsible for providing the gas line from the designated point of demarcation to the building. D/B Contractor shall provide a gas valve between service riser and regulator as well as provide and install the gas meter. Ft Polk prefers Ultrasonic Sonix 880 gas meter and regulator or approved equal (see Appendix DD).

6.4.6.11. Cable TV Service: Provide 4" duct between pole #D98 and existing manhole #63 and install P3-6.25 coax cable in new duct and extend thru new entrance duct in one of the 1" inner ducts to the new Fire Station Communications Dorm. The connection point is approximately 10' above grade at pole #D98. Suddenlink, (TV Vendor) will provide final tie-in at Pole D98.

#### 6.4.7. Cut and Fill

Cut and Fill - No Project Specific Requirements.

#### 6.4.8. Borrow Material

No Borrow Pit is available on Fort Polk. The Contractor shall provide materials from an outside source.

#### 6.4.9. Haul Routes and Staging Areas

The Contractor Haul Route shall be as shown on the drawings provided in Appendix J.

#### 6.4.10. Clearing and Grubbing:

The drawings provided are based on the existing site survey, aerial photograph, and proposed utility plans. They approximate existing conditions and locations of existing utilities. Comply with the Ft Polk IDG for clearing and grubbing requirements. All remnants of prior building construction shall be removed.

#### 6.4.11. Landscaping:

D/B Contractor shall coordinate with Ft Polk prior to any tree removal as per Environmental Para 6.15 and shall use existing trees when possible to provide natural shade.

6.4.11.1. Landscape Architectural Features. Locate trees and shrubs to buffer harsh natural conditions such as in parking lots and large paved areas. Hedges and street trees and earthen berms are useful in creating these buffers. Utilize deciduous material to provide for sun in the winter and shade in the summer. Design and locate site elements to blend with and enhance the physical environment. Design and locate required antiterrorism measures to blend with the physical environment. Use a combination of canopy and ornamental trees along sidewalks to provide shade, define the path, provide visual interest and discourage the creation of "shortcuts". Discourage the use of flowering and fruit bearing trees and shrubs along walkways because of the threat of insects or debris problems. Contractor shall plant native trees, shrubs and grasses. Contractor shall meet the requirements of LEED Water Efficiency Credits 1.1 and 1.2 Water Efficient Landscaping. Contractor shall not plant invasive and/or exotic species (plant materials) in the Landscape Plan. Preferred plants, invasive plants, and exotic species as noted by Fort Polk DPW are included in Appendix I. In addition, on previously developed or graded sites, the Contractor shall restore or protect a minimum of 50% of the site area (excluding the building footprint) with native or adapted vegetation and provide a vegetated open space area adjacent to the building that is equal to the building footprint.

6.4.11.2. Landscaping shall comply with requirements of chapter 3 of this section, UFC 4-010-01, and the Fort Polk IDG

6.4.12. Turf:

Areas required to have natural turf per Standard Design Criteria shall be grass to meet requirements of the Fort Polk IDG.

## 6.5. ARCHITECTURE

6.5.1. General: To the maximum extent possible within the contract cost limitation, the buildings shall conform to the look and feel of the architectural style and shall use the same colors as adjacent facilities as expressed herein. The Government will evaluate the extent to which the proposal is compatible with the architectural theme expressed in the RFP during the contract or task order competition. The first priority in order of importance is that the design provides comparable building mass, size, height, and configuration compared to the architectural theme expressed herein. The second priority is that design is providing compatible exterior skin appearance based upon façade, architectural character (period or style), exterior detailing, matching nearby and installation material/color pallets, as described herein.

### 6.5.2. Design

6.5.2.1. Appendix F is provided "For Information Only", to establish the desired site and architectural themes for the area. Appendix F identifies the desired project look and feel based on Fort Polk's Installation Architectural Theme from existing and proposed adjacent building forms; i.e. building exterior skin, roof lines, delineation of entrances, proportions of fenestration in relation to elevations, shade and shadow effects, materials, textures, exterior color schemes, and organizational layout.

6.5.2.2. The design should address Fort Polk's identified preferences. Implement these preferences considering the following:

- (a) Achievable within the Construction Contract Cost Limitation (CCL)
- (b) Meets Milestones within Maximum Performance Duration.



- (c) Achieves Full Scope identified in this Solicitation
- (d) Best Life-Cycle Cost Design
- (e) Meets the Specified Sustainable Design and LEED requirements
- (f) Complies with Energy Conservation Requirements Specified in this RFP.

6.5.2.3. Priority #1. Visual Compatibility: Facility Massing (Size, Height, Spacing, Architectural Theme, etc.) Exterior Aesthetic Considerations: The buildings massing, exterior functional aesthetics, and character shall create a comprehensive and harmonious blend of design features that are sympathetic to the style and context of the Installation. The Installation's intent for this area is:

A historical Louisiana architectural theme similar to those found in the Natchitoches/New Orleans French Quarter areas. Refer to Aesthetic Considerations in Appendix F and the Fort Polk IDG for exterior colors allowed and utilized on adjacent facilities. An off-white/buff colored exterior masonry is preferred. Refer to Appendix J for concepts developed with users for additional details, colors, and materials preferred. Considerations should be given to the articulation of the entries, windows, corners, and massing of the building. The concept drawings in Appendix J supersede the "Modified Two Company Headquarters Fire Station Floor Plan" provided anywhere else in the RFP.

6.5.2.4. Priority #2. Architectural Compatibility: Exterior Design Elements (Materials, Style, Construction Details, etc.) Roofs, Exterior Skin, and Windows & Door Fenestrations should promote a visually appealing compatibility with the desired character while not sacrificing the integrity and technical competency of building systems.

6.5.2.5. See Appendix F for exterior colors that apply to Architectural character at Fort Polk. The manufacturers and materials referenced are intended to establish color only, and are not intended to limit manufacturers and material selections.

6.5.2.6. Additional architectural requirements:

- (a) Install fall protection anchor points on all roofs with a slope greater than 2:12
  - b. The Installation Fire Department prefers that the required Knox Box be located at the front entry. The Contractor must contact the Fire Department through the Contracting Officer to receive the purchase order form for the Knox Box.

6.5.2.7 Central Intercom System: An Intercom System shall be provided by D/B Contactor as per Army Standard Design Criteria in Para 3 of this Section to include the following features:

- a. Communicate to each and/or every room interior room (Speaker and private phone)
- b. The central intercom system shall connect to and work in conjunction with the Westnet Alerting System in Appendix JJ or an approved equal.

6.5.2.8. The Government will provide the building reference number for the facility as described in 01 10 00, Para 5.3.4.1.

6.5.2.9. Exterior Design Objectives

6.5.2.9.1. Roof system shall have Underwriters Laboratory (UL) Class A rating for fire resistance, UL 100 wind resistance rating, and Factory Mutual (FM) I-100 fire and wind resistance rating. The Installation prefers the roof to be at a 4:12 slope.

6.5.2.9.2. Trim and Flashing. All exterior metals including gutters, downspouts, and fascias shall be factory pre-finished metal, aluminum, or galvanized steel base metal with baked-on or bonded high-performance fluoropolymer coating, fabricated and installed in compliance with SMACNA Architectural Sheet Metal Manual.

6.5.2.9.3. Bird Habitat Mitigation: The Design-Builder shall provide details necessary to eliminate the congregating and/or nesting of birds at, on, or in the facility.

#### 6.5.2.9.4. Exterior Doors and Frames

(a) Main Entrance Doors: Provide aluminum storefront doors and frames with Architectural Class 1 anodized finish, fully glazed, with medium or wide stile are preferred for entry lobbies or corridors. Storefront systems shall comply with wind load requirements of applicable codes and UFC 4-010-01 requirements. Framing systems shall have thermal-break design. All exterior doors will be Red color, with red trim. Specific color to be selected from manufacturer color charts by Contracting Officer.

(b) Side Entrance/Exit Doors: Exterior doors and frames opening to spaces other than corridors or lobbies shall be insulated hollow metal and comply with ANSI A250.8/SDI 100. Fire-rated openings shall comply with NFPA 80, and the requirements of the labeling authority. Door and frame installation shall comply with applicable codes and UFC 4-010-01 requirements. Exterior doors shall have half-light configurations as shown on the drawings in Appendix J. All exterior doors shall have half round transom glass panel. All glazing shall meet requirements of UFC 4-010-01, the International Building Code (IBC), UFC 1-200-01, NFPA 101, NFPA 80.

(c) Apparatus Bay Doors: Doors for the Apparatus Bays are preferred to be Bi-Folding doors of the required size.

(d) In accordance with requirements of ASHRAE 90.1, Section 5 and Normative Appendix A, provide pre-glazed unit windows bearing temporary labels certifying overall assembly U-factor, SHGC, and visible transmittance determined in compliance with NFRC 100 and 200. For glazed doors in metal frames, provide systems with overall assembly performance values (U-factors, SHGC and visible transmittance) according to NFRC 100/200, calculated using NFRC Component Modeling Approach (CMA), certified by manufacturer on Label Certificate for the project upon completion of the installation. Contact NFRC for information on the NFRC 100/200 rating requirements. Refer to: HYPERLINK "<http://www.nfrc.org/CMAprogram.aspx>"<http://www.nfrc.org/CMAprogram.aspx>

#### 6.5.2.9.5. Exterior Door Finish Hardware

(a) Hardware General: All hardware in the facility shall be consistent and shall conform to ANSI/BMHA standards for Grade 1. All requirements for hardware keying shall be coordinated with the Contracting Officer. Hardware finishes shall conform to ANSI/BHMA A156.18, Provide ANSI 626 (Satin Chromium plated on Brass or Bronze) or 630 (Stainless Steel). The keying system on Fort Polk property uses BEST or Arrow keyways, so therefore BEST or Arrow cores are preferred. Locksets shall have interchangeable cores (IC). Cores shall have not less than seven pins. Locksets for mechanical rooms and electrical closets shall be keyed to the existing Post Utilities Master Keying System, consisting of Medeco cylinders, 1 1/4 inches, AR-1 keyway, without key removable cores. Deadbolt locks shall be installed on mechanical/electrical rooms keyed to the DPW keying system. Disassembly of knob or lockset shall not be required to remove interchangeable core from lockset. All locksets and exit devices shall accept same interchangeable cores. Plastic cores are unacceptable. Door hardware and security requirements must be coordinated with the functional requirements, the Room-by-Room Criteria, and the electrical security/fire alarm system requirements of this document. Provide all hardware necessary to meet the

requirements of NFPA 80 for fire doors and NFPA 101 for exit doors. Provide door closers for all exterior doors, all doors opening to corridors and as required by codes.

6.5.2.9.6. Exterior Windows: Provide insulated thermally broken windows complying with applicable codes and UFC 4-010-01. All windows shall be top sash operable windows with locks and furnished with insect screens removable from the inside. Window frame and trim color is to be selected by the Contracting Officer from the manufacturer's full line of standard colors, a Red trim color is preferred.

6.5.2.9.7. Exterior Glass and Glazing: Comply with force protection standards in accordance with UFC 4-010-01. Provide minimum 1" insulated tinted glass. Provide thickness required to provide necessary sound deadening properties required for the exterior walls (The rating of the exterior glass shall be within 5 decibels of the wall to which it is installed.)

6.5.2.9.8. Thermal Insulation: Provide exterior wall, floor, and roof/ceiling assemblies with thermal transmittance (U-values) required to comply with the proposed energy calculations for the facilities. Insulation shall not be installed directly on top of suspended acoustical panel ceilings. U-values must be calculated for the entire assembly, including window and door units and openings. Total U-values must take into account energy reductions required by UFCs and Federal Acts, laws, or executive orders.

6.5.2.9.9. In accordance with requirements of ASHRAE 90.1, Section 5 and Normative Appendix A, provide pre-glazed unit windows bearing temporary labels certifying overall assembly U-factor, SHGC, and visible transmittance determined in compliance with NFRC 100 and 200. For field assembled windows, and storefront, including glazed doors, provide systems with overall assembly performance values (U-factors, SHGC and visible transmittance) according to NFRC 100/200, calculated using NFRC Component Modeling Approach (CMA), certified by manufacturer on Label Certificate for the project upon completion of the installation. Contact NFRC for information on the NFRC 100/200 rating requirements. Refer to: HYPERLINK "<http://www.nfrc.org/CMAprogram.aspx>"

6.5.2.9.10. Exterior Louvers shall be designed to exclude wind-driven rain, with bird screens and made to withstand a wind loads in accordance with the applicable codes. Wall louvers shall bear the AMCA certified ratings program seal for air performance and water penetration in accordance with AMCA 500-D and AMCA 511.

6.5.2.9.11. Exterior Paint Systems shall be based on and comply with the recommendations of the Master Painters Institute (MPI) for the substrate to be painted and the environmental conditions existing at the project site. Exterior surfaces, surfaces except from factory pre-finished material shall be painted with a minimum one prime coat and two finish coats. No lead paints are acceptable. For exterior applications provide an MPI gloss Level 5 finish (semi-gloss), unless otherwise specified. Apply all paints in accordance with the manufacturer's specifications.

6.5.2.9.12 CCTV shall be Government Furnished Contractor Installed (GFCI). Please refer to drawing E-101 in Appendix J for camera quantities and locations.

6.5.2.9.13 Relocate existing memorial from North Fort Polk Airfield Fire Station and create viewing area within the site of this proposed project. Site should be accessible from main entry walk, include landscaping, lighting & permanent seating. Accent brick Paved inlays to allow for replacing with engraved bricks would be preferred. See Appendix SS.

### 6.5.3. Programmable Electronic Key Card Access Systems:

#### 6.5.3 Programmable Key Card

Refer to Appendix KK for Electronic Security System (ESS) software and hardware requirements for an electronic keypad/proximity access control system description and requirements.

#### 6.5.3.1 Buzzer Access System

The Contractor shall provide a Buzzer Type Access System at the main entry of the Fire Station. The Buzzer Access System shall have a manual override and controls interlocked with the ADA approved automatic door operator for handicapped accessibility. Provide electronic buzzer access to main front interior doors for Fire Station with entry control from the Clerk/Reception Desk. Buzzer type access system shall include but not limit to access control panel, power supply units, wires, electronic locking devices, and conduits. Provide all necessary power requirements and control requirement to make a complete and functional buzzer type access system.

#### 6.5.4. INTERIOR DESIGN

##### 6.5.4.1 Interior Doors and Frames: **(AM0003) Provide flush wood solid core doors.**

**~~(a) Wood Doors: Provide flush wood solid core doors complying with National Wood Window and Door Association (NWWDA) I.S.-1A. Stile edges shall be non-finger jointed hardwood compatible with face veneer. Provide Architectural Woodwork Institute (AWI) Grade-A hardwood face veneer for transparent finished doors; provide AWI Sound Grade hardwood face veneer for painted doors. (Transparent finished doors are preferred.)~~**

**(a) Wood Veneer Doors are not acceptable. (/AM0003)**

(b) Dorm room doors shall have glass transoms above door frame; comply with International Building Code (IBC), UFC 1-200-01, NFPA 101, NFPA 80 and other applicable standards to determine glass requirements.

(c) Hollow Metal Frames: Comply with ANSI A250.8/SDI 100. Frames shall be minimum Level 2, 16 gauge, with continuously welded corners and seamless face joints; factory primed.

(d) Fire-rated and Smoke Control Doors and Frames: Comply with International Building Code (IBC), UFC 1-200-01, NFPA 80, and requirements of labeling authority.

(e) STC ratings shall be of the sound classification required and shall include the entire door and frame assembly.

(f) Provide clear tempered or safety glass at all door lites in compliance with the International Building Code, and/or UFC 1-200-01, and UFC 4-010-01. Glazing may be required to be fire rated, in compliance with NFPA codes.

##### 6.5.4.2 Interior Door Finish Hardware: Door hardware and security requirements must be coordinated with the functional requirements, the room-by-room criteria, and the electrical security/fire alarm requirements.

(a) Hardware General: All hardware in the facility shall be consistent and shall conform to ANSI/BMHA standards for Grade 1. All requirements for hardware keying shall be coordinated with the Contracting Officer. Hardware finishes shall conform to ANSI/BHMA A156.18, Provide ANSI 626 (Satin Chromium plated on Brass or Bronze) or 630 (Stainless Steel). The keying system on Fort Polk property uses BEST

or Arrow keyways, so therefore BEST or Arrow cores are preferred. Locksets shall have interchangeable cores (IC). Cores shall have not less than seven pins. Locksets for mechanical rooms and electrical closets shall be keyed to the existing Post Utilities Master Keying System, consisting of Medeco cylinders, 1 1/4 inches, AR-1 keyway, without key removable cores. Deadbolt locks shall be installed on mechanical/electrical rooms keyed to the DPW keying system. Disassembly of knob or lockset shall not be required to remove interchangeable core from lockset. All locksets and exit devices shall accept same interchangeable cores. Plastic cores are unacceptable. Door hardware and security requirements must be coordinated with the functional requirements, the Room-by-Room Criteria, and the electrical security/fire alarm system requirements of this document. Provide all hardware necessary to meet the requirements of NFPA 80 for fire doors and NFPA 101 for exit doors. Provide door closers for all exterior doors, all doors opening into atriums and/or corridors and as required by codes.

(b) Provide ADA compliant hardware as required.

6.5.4.3 Casework: Provide casework complying with AWI Section 400, Custom Grade flush overlay wood cabinets. Cabinets to be Premium Quality, with heavy duty hinges and hardware. Finish is to be painted.

6.5.4.3.1 Work surfaces and counter shall be solid surfacing material.

6.5.4.3.2 Backsplash shall be continuous across all countertop areas.

6.5.4.3.3 Install casework complying with AWI Section 1700.

6.5.4.4 Paint: Provide Epoxy paint as per Army Standard in Appendix D so that surfaces are smooth and easily cleanable. Interior Paint Systems shall be based on and comply with the recommendations of the Master Painters Institute (MPI) for the substrate to be painted and the interior environmental conditions existing at the project site. Interior surfaces, except factory pre-finished material or interior surfaces receiving other finishes shall be painted a minimum of one prime coat and two finish coats. No lead paints are acceptable. In wet areas, provide an MPI Gloss Level 5 (semi-gloss) finish. Apply all paints in accordance with manufacturer's instructions.

6.5.4.5 Gypsum Board: Comply with ASTM C 36. Minimum panel thickness shall be 5/8 inch. Provide moisture resistant panels (glass-mat panels are preferred) at locations subject to moisture.

6.5.4.6 Interior Windows: Provide minimum 1/4" clear tempered glass. Provide STC rated windows that meet required STC rating of the wall it is located.

#### 6.5.4.7 Interior Finishes

6.5.4.7.1 Wall, ceiling and floor finishes shall conform to the Army Standard Design requirements in Para 3 of this section and all applicable requirements of the IBC, NFPA and UFC 3-600-01. Interior finish materials shall comply with NFPA 101 Chapter 10 – Interior Finish, Contents and Furnishings, NFPA 255 and NFPA 286. Where code requirements conflict, the most stringent code requirement shall apply.

6.5.4.7.2 Interior finish materials shall be as shown in Section 01 10 00 The Army Standard for Fire Stations (March 2010) in this RFP, unless specifically noted below. Please note, due to the Approved Modified Standard, rooms listed in the Standard Design Criteria may not be present.

6.5.4.7.3 Gypsum board walls shall have an eggshell enamel painted finish with an orange peel or medium sand finish texture. Areas subject to moisture or heavier abuse such as bathrooms, kitchens, laundry area shall receive a semi-gloss enamel paint finish.

6.5.4.7.4 Interior walls of both apparatus bays shall consist of masonry type construction to a height not to exceed the shelving and lockers. Secure fencing will continue to roof deck between apparatus bays. (This will allow for spraying down of bay areas for clean purposes) At Apparatus bays, provide a broom finish concrete surface with sealer. Broom direction to be front to back, so that the water drains to the floor drains.

6.5.4.7.5 Lobby and hallways shall have porcelain tile.

6.5.4.7.5.1 Hallway base to be tile to match floor.

6.5.4.7.6 Fitness Room shall have a rubberized floor system

6.5.4.7.7 All toilet areas shall have painted gypsum board ceilings; attention shall be given to finish to resist moisture.

6.5.4.7.8 Public Restrooms shall have full height ceramic tile walls. Tile grout shall be epoxy and in a neutral to medium tone. Color to be selected by the Contracting Officer from manufacturer's standard colors.

6.5.4.7.9 Firefighter bathrooms shall have ceramic wall tile or non-porous solid surfacing material from floor to ceiling in showers. Tile grout shall be epoxy and in a neutral to medium tone. Color to be selected by the Contracting Officer from manufacturer's standard colors. Non-shower area may be covered to wainscot height

6.5.4.7.10 Where carpet is required, provide carpet panels in lieu of rolls.

6.5.4.7.10.1 Commercial grade level loop carpet or carpet tile shall be used in dorm rooms and public areas. Carpet with a small pattern, tweed or random design shall be used for appearance retention and durability. Factory attached carpet cushion shall be provided.

6.5.4.7.11 Dorm Rooms shall have carpet tile.

6.5.4.7.12 Dining/Day Room shall have VCT finish.

6.5.4.7.13 Wall base shall be a resilient coved base at most walls.

6.5.4.7.13.1 Bathrooms and Restrooms shall have a ceramic tile base.

6.5.4.7.14 Recessed mats shall be used at all entry vestibules.

#### 6.5.4.8 Specialties and Furnishings

##### 6.5.4.8.1 Corner and Bumper Guards

(a) Provide surface-mounted, high impact integral color rigid vinyl corner guards at all outside corners of gypsum board walls.

(b) Provide stainless steel corner guards at all outside corners of ceramic tile walls.

(c) Bumper Guards shall be installed in areas prone to hi-impact use, such as corridors, etc.

6.5.4.8.2 Toilet accessories shall be provided in accordance with Toilet Accessories Table in Standard Design Criteria in Para 3 of this section. Provide paper towel dispenser, toilet paper dispensers, sanitary napkin dispensers/disposals, mirror, and soap dispensers per acceptable industry practice. All toilet accessories shall be stainless steel or chrome finished steel. D/B Contractor shall coordinate with Fort Polk and provide toilet accessories in accordance with the Fort Polk Service Contract.

6.5.4.8.3 Provide lockable doors on Contractor Furnished refrigerators, freezers, and cabinets used for storing food in kitchen.

6.5.4.8.4 Dorm rooms shall have a mesh roller shade with blackout lining (where windows are present).

6.5.4.8.5 Dorm rooms shall have CATV receptacles, power, and TV mounting brackets.

6.5.4.8.6 Laundry room counter for folding clothes shall be solid surface with open wire shelving below.

**(AM003)** 6.5.4.8.6 Mask Pressure Testing Machine is Government Furnished, Contractor Installed (GFCI) equipment. Successful offeror will provide conduit / infrastructure / power / dedicated space for this equipment. Government will provide equipment cutsheets and data during the design stage.  
**(/AM003)**

6.5.4.9 Ceiling Heights - All ceiling heights shall be as indicated in Paragraph 3, unless specifically noted below.

6.5.4.9.1 Telecommunications Room shall have a minimum ceiling height of 10'-0" to ensure compliance with I3A Criteria (See Appendix II for link to I3A Communications Criteria) and TIA standards. (This shall overwrite the requirement in paragraph 3, Section 3.9, Attachment A, Army Standard Design Criteria Fire Stations, Room by Room Descriptions, Space Description for 'Telecommunications Room').

Interior building signage requirements:

6.5.7 Interior Signage:

Comply with requirements of ADAAG and UFAS. Interior signage shall be fully integrated as a design element with the architecture and interior design. Signage for general office areas shall be modular to accommodate personnel changes or room function changes. International symbols are to be used where possible. Emergency/fire evacuation plans shall be located at key areas to ensure fire safety. Signage plaque colors shall be compatible with the interior color scheme. Electrical or mechanical spaces shall have room signs.

6.6. STRUCTURAL DESIGN

6.6.1 GENERAL: Classification of these buildings shall be in accordance with UFC 3-310-01 Table 1.

6.6.2 APPLICABLE STANDARDS/CODES/CRITERIA:

The structural design shall fully comply with the following listed criteria in addition to the provisions provided in Paragraph 4.0:

UFC 1-200-01 Design: General Building Requirements

UFC 3-301-01 Design: Structural Engineering:

International Building Code (IBC) – except as modified in UFC 1-200-01 & UFC 3-301-01

Structural Loads:

1. The Dining Facility is classified as a Category IV building for wind and seismic per ASCE 7-05, CESWD-AEIM, and UFC 3-301-01.
2. Minimum dead loads shall be in accordance with ASCE 7-05. Dead loads include the weight of all permanent materials and equipment supported in or on a structure, including the structures own weight.
3. Minimum live loads shall be in accordance with UFC 3-301-01 and ASCE 7-05 as follows:
  - a. AREA LOADS
    - i. Mechanical / Electrical /Communications Rooms 125 psf
    - ii. Public Areas and Corridors Serving Public Areas 100 psf
    - iii. Kitchen/Dining Room 100 psf
    - iv. Restrooms 100 psf
    - v. Apparatus Bays- IBC section 1609.6, H20-44 loading, 250 psf minimum.
    - vi. All Other Areas 100 psf
    - vii. Roof Per ASCE 7, min. 20 psf
4. Wind loads shall be calculated using a Basic Wind Speed (3-Second Gust Speed) of 95 mph and Exposure C in accordance with UFC 3-301-01 and IBC 2009. Design loads shall be determined for the main wind-force resisting system in order to estimate preliminary base reactions.
5. Minimum building seismic requirements shall be in accordance with UFC 1-200-01, UFC 3-301-01, the CESWD-AEIM, the 2009 International Building Code, and ASCE 7-05. The new building's classification and applicable ground motion shall be determined by its use and geographical location.
  - a. Short period spectral acceleration  $S_s = 0.12g$
  - b. One second spectral acceleration  $S_1 = 0.05g$



6. Minimum lateral design pressure on interior stud partition walls shall be 5 psf, interior CMU partitions shall be 10 psf.
7. Deflection of structural members over span shall not exceed those permitted by IBC Table 1604.3 or Table 2-1 of UFC 3-301-01.
8. The design of the new foundation systems shall be based on the recommendations provided in the "Fort Polk, Louisiana, Emergency Service Center" Government Geotechnical Report, provided by the Fort Worth District Corps of Engineers Geotechnical Branch.

6.6.3 The Structural system needs to be compatible with intended functions and components that allows for future flexibility, renovation, and reconfigurations of the interior space. The structural clear height at each floor shall be coordinated with the architectural ceiling height plus mechanical/electrical suspended equipment.

6.6.4 Lateral Load Resisting System: The structure shall be designed, fabricated, and detailed as a complete structural system. Lateral loads shall be resisted by lateral load resisting system in both major directions of the structure.

6.6.5 The foundation shall be a reinforced ribbed mat slab, or a reinforced concrete mat slab. Shallow spread footings shall not be used for this facility. Provide a minimum of 2'-0" of soil removal and replacement below the bottom of the ribs or bottom of the thickened mat slab. Replace the 2'-0" minimum over excavation with structural fill as specified in the government provided geotechnical report. The D/B Contractor shall provide a Geotechnical report investigation prepared by a licensed Geotechnical Engineer for verification of the foundation recommendations.. The provided information shall be based on the soil conditions at the specific site. The final Geotechnical report shall have the confirm the allowable bearing pressure and soil site class per IBC and shall explicitly state the recommended type of foundation and design parameters to best counteract the effects of any expansive soils present. The structural foundations minimum concrete strength shall be 3000 psi. Flat slab or ribbed mat slabs shall be designed based on the appropriate UFC and SWD AEIM recommended procedures. Subgrades under all facility foundations shall be treated to resist subterranean and other wood destroying insects known to exist in the vicinity of the site regardless of building materials utilized in the projects construction. Such treatment shall be in accordance with the environmental criteria provided as reference in Appendix LL.

6.6.6 The structures will be designed for self weight of all building/structure components plus allowance for miscellaneous suspended mechanical and electrical systems.

6.6.7 Special Design Considerations and Requirements: Window, skylights and glazed door frame members, connections to surrounding walls or roof, hardware and associated connections, and glazing shall be designed for blast protection by the Designer of Record in accordance with UFC 4-010-01.

## 6.7. THERMAL PERFORMANCE

No additional requirements

## 6.8. PLUMBING

6.8.1 Plumbing fixtures - Provide quantity and type of plumbing fixtures required for the occupancy, use and functions described for this facility. Freeze proof fixtures are to be provided at all exterior locations. SS Grade 1 is the preferred stainless steel type for plumbing fixtures and bathroom accessories.

6.8.2 Domestic Water Distribution - Provide valves at water supplies to fixtures and to provide ease of maintenance as required in the International Plumbing Code for all valves and hydrants. Hose bibs are to be provided on the front and back elevations of the building and one on each playground and must be freeze-proof, box type. Stop valves shall be provided for refrigerators and ice makers shall be ball valves.

6.8.2.1 Piping materials shall be as per applicable criteria but may be restricted based on specific conditions at a particular site. Generally, above ground pressure piping shall be copper Type L and underground pressure pipe shall be copper Type K (No Type M). Fort Polk DPW preference is for non-plastic plumbing materials; however, PVC waste and vent pipe is acceptable.

6.8.2.2 Exterior Water Piping Freeze Protection - Seasonally (not used in winter) utilized water supply piping shall be detailed and installed for complete drain down including interior or below grade isolation valve. Exposed water piping that is utilized year round shall be insulated and heat traced and protected with pipe jacketing to ensure that the piping will not freeze.

6.8.3 Domestic Water Equipment - Provide new natural gas water heating system for all spaces, which require hot water, including the kitchen and the dishwasher.

6.8.4 Fixture Faucet Mixing Valve - Provide single handle type mixing faucet valves with seals and seats combined into one replaceable cartridge; the cartridge shall be designed to be interchangeable between lavatories, bathtubs, kitchen and bar sinks, etc. or provide replaceable seals and seats that are removable either as a seat insert or as a part of a replaceable valve unit. Manufacturer preferences are Delta, Kohler, Price Pfister, Crane.

6.8.5 Insulation and Identification - Provide mineral fiber insulation with vapor barrier or closed cell foam on domestic water (hot and cold) supply piping. Provide identification for all piping and equipment.

6.8.6 Sanitary Waste - For all waste and vent piping provide all fittings and connections necessary.

6.8.7 Floor Drains – Provide floor drains in toilet rooms, janitor's closets, kitchen, laundry, mechanical rooms and for equipment requiring drainage per the International Plumbing Code (IPC). Provide

automatic trap primers for all floor drains where a trap seal is subject to loss by evaporation. Floor drains in areas of grease or oil shall drain to a central grease/oil trap and not directly to the main sewer system.

6.8.8 Natural Gas Supply: The D/B Contractor is to furnish standard gas pressures from building regulator of 8-15 ounces, 2 psi. All gas lines connected to non permanent equipment will be equipped with shut off valves and couplings. All gas regulators in building to be vented to the outside.

6.8.9 Grease Interceptor - Provide a minimum 100 gallon capacity grease interceptor for the kitchen plumbing system.

6.8.10 Water Separator - Provide an oil water separator for fire truck bays.

6.8.11 Plumbing - Systems shall be per UFC 3-420-01.

#### 6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

#### 6.9 SITE ELECTRICAL SYSTEMS

##### 6.9.1 Site Electrical Systems Design Requirements

6.9.1.1 The contractor shall provide demolition of existing electrical facilities and associated wiring, conduit and the site. Refer to Appendix J for Conceptual Electrical / Communication Site Plan.

6.9.1.2 **(AM009) As a CLIN Option Item**, Relocate roadway lightings and associated wiring and conduit at Louisiana avenue to accommodate widen section of Louisiana avenue to create a right turn lane (See drawing in Appendix J for Conceptual Communication Site Plan). **(/AM009)**

6.9.1.3 Power to the Fire Station will be supplied by a pad mounted transformer. Primary feeder to the transformer will be underground. The underground primary is connected to a new in-line power pole through a riser pole. Secondary feeder from the transformer to the building will be in conduit. Location of the transformer shall meet AT/FP requirement. All primary construction shall be installed in accordance with energy standards from Entergy included in Appendix MM.

(a) Aerial to Underground: Aerial to underground transition pole including, but not limited to, crossarms, surge arresters, fused cutouts, terminators, and mounting equipment; underground primary duct and feeders, and other elements required to get power from an existing aerial primary system to service transformer (See drawing Conceptual Exterior Electrical).

(b) Underground: Underground primary duct shall be a two-way 4" ducts with concrete encased and buried depth shall meet Ft. Polk requirements. Spare duct shall have pull wires.

(c) Conductors. No primary underground conductor shall be smaller than No. 2 AWG copper.

(d) Transformer: Transformer will be pad-mounted and size shall have capability to supply power to building demand load and future growth. Configuration of the transformer will be delta in primary and Y

grounded secondary.

(e) Secondary feeder. Feeder from transformer to the building will be in conduit.

(f) All electrical components shall have capability to withstand existing short circuit current at that location.

**(AM004)**

6.9.2 Emergency power. Emergency generator shall be provided for backup power. The generator shall have capability to provide 100% back-up power to all loads. The generator shall utilize ~~natural gas~~ **diesel fuel** and located outside of the building. Location of the generator shall meet AT/FP requirement. **As a bid option item the generator shall utilize natural gas with no on site fuel storage requirement.**

**(/AM004)**

6.9.3 Exterior Lighting. Exterior lighting shall be designed and installed to coordinate with building configuration and security requirements. Illumination levels shall be meet IES requirement. Lighting circuits shall be controlled by a time switch. This is to facilitate 24 hour and night operations when necessary.

6.9.4 Modify the existing traffic signal system as required by the road configuration.

6.9.5 Telecommunications Requirements. Telecommunications design shall be in accordance with the Technical Guide for Installation Information Infrastructure Architecture (I3A). In the I3A Technical Guide, the word "shall" shall be substituted for the word "should" throughout the document.

6.9.5.1 Provide 50 pair of the telephone cable and 12 strand single mode fiber from the local manhole to the new building.

6.9.5.2 Communication Tower. Provide a 100ft self support communication tower. The tower shall be designed for standing wind load and ice. The tower also can support ten (10) antennas mounted on it. The leg foundation of the tower shall be as designed by the manufacturer to meet the above requirements. The tower shall a climbing ladder with OSHA safety climbing equipment installed. Obstruction light shall be provided and met FAA safety requirement. Painting of the tower shall meet FAA requirement. Lightning protection shall be provided and grounding system for the tower shall be connected to the building grounding system.

6.9.5.3 Add signal cables from tower. They will run uninterrupted (underground) to Dispatch office.

6.9.5.4 Provide one wall phone line outlet with integral two-way communications in the Telecom Room, Electrical Room and Mechanical Rooms.

6.9.6 Lightning Protection. Lightning protection shall be provided where recommended by the Lightning Risk Assessment of NFPA 780 (2004) Annex L.

6.9.7 Grounding, Bonding and Shielding.

Grounding, bonding and shielding shall be provided for facility. Grounding straps shall be provided as required and will be connected to the building grounding system.

6.9.8 Corrosion Control

Cathodic protection shall be furnished on all ferrous metal pipes, tanks or other equipment in contact with earth. Cathodic protection shall comply with the recommendations of National Association of Corrosion of Engineers (NACE).

The Contractor shall obtain the services of a "corrosion expert" to design, supervise, inspect, and test the installation and performance of the cathodic protection system. "Corrosion expert" refers to a person, who by thorough knowledge of the physical sciences and the principles of engineering and mathematics,

acquired by professional education and related practical experience, is qualified to engage in the practice of corrosion control of buried or submerged metallic surfaces. Such a person must be accredited or certified by the National Association of Corrosion Engineers (NACE) as a NACE Accredited Corrosion Specialist or a NACE certified Cathodic Protection (CP) Specialist or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metallic piping and tank systems, if such certification or licensing includes 5 years experience in corrosion control on underground metallic surfaces of the type under this contract. The "corrosion expert" shall obtain soil resistivity data, acknowledging the type of pipeline coatings to be used and reporting to the Contractor the type of cathodic protection required.

#### 6.9.10 Communication System Services:

(a) Telecommunication System Services: The existing voice (copper) and data (fiber optic) "On-Base" outside cable plants on the Installation have a confirmed capacity to handle new and existing services according to the Installation Network Enterprise Center (NEC).

Refer to Para 6.4.6.6 and Appendix J - Drawings for Communication Utility requirements.

#### 6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10.1 Integrated Commercial Intrusion Detection System (ICIDS) is NOT required, however a door system shall be provided in accordance with Electrical Security Systems Upgrades shown in Appendix KK.

6.10.2 Provide one complete Fire Alarm and Detection System for the Fire Station installed IAW UFC 3-600-01 Ch. 5, NFPA 70 and NFPA 72. Fire alarm system shall consist of a fire alarm panel and RF transceiver, initiating devices, and notification devices. Fire Alarm system shall be compatible with existing Base fire alarm system and shall be coordinated with Base Fire Chief and/or AHJ. The system shall be designed by a Fire Protection Engineer and installed by a NICET 4 technician.

(a) The RF Transceiver shall be compatible with the Fire Department receiving system. The fire alarm system shall have an Integrated Radio Transceiver, Monaco BT-X or approved equal, with narrowband D-21 capabilities and operating frequency of 165.0625 MHZ. Interface BT-X with Fire, Mass Notification and Relay Cards.

(b) The Fire alarm receiving system is a Monaco D-21 system. Ft Polk FES requests a Monaco M-2 fully addressable Fire Alarm Control Panel (FACP) that is compatible with the post system. A smoke detector shall be installed above the FACP as required by NFPA 72. A smoke detector is also required in the Electrical Room if separate from the Mechanical Room.

(c) The fire system must report 100% zone by zone (by device) to Fire Department D-21 receiving system. All tamper devices shall be sent to the D-21 system as a supervisory tamper.

(d) Manual pull stations shall be of metal construction, dual action and key operable. The Fire Alarm System wiring shall be Class "A" for NAC and SLC.

(e) A looped conduit system shall be provided so that if the conduit and all conductors within are severed at any point, all NAC and SLC will remain functional.

(f) The Fire alarm system will comply with the requirements of UFC 3-600-01 and NFPA Criteria. FACP and fire sprinkler riser shall be located in the Mechanical Room. All mechanical and electrical rooms shall be post engineer keyed for emergency personnel access. Audible (voice) and visual annunciation shall be

provided. Pull stations will be the non-glass, key reset type. Smoke detectors shall be provided in all supply and return air ducts. Upon activation of smoke duct detectors, the fire alarm system will shutdown the HVAC system. An alarm signal will be transmitted to the local fire department. This signal must be compatible with the local fire department's equipment.

(g) Provide smoke detection in all environmentally conditioned spaces, including closets over 20 square feet, except for the kitchen.

6.10.3. A Fire Station alert system shall be provided and installed in accordance with the attached criteria contained in Appendix JJ.

6.10.4 Provide CATV receptacles (wired), power receptacle & TV wall mounting brackets in each dorm room, 2 in Day / training room, and 4 in fitness room.

#### 6.11. HEATING, VENTILATING, AND AIR CONDITIONING

HVAC Systems and Equipment shall meet the requirements of UFC 4-010-01.

##### 6.11.1 System Description

(a) Provide new heating, ventilating and air conditioning (HVAC) systems for the Fort Polk Fire Station that attains the following objectives: Occupant comfort, Indoor air quality, Acceptable noise levels, Energy efficiency, Reliable operation, and Ease of maintenance. Refer to the Standard Design occupancy levels.

(b) The HVAC system shall provide each zone with the choice of heating or cooling year round unless otherwise indicated. Each zone shall have its own limited range of control, as allowed by the control system central workstation. Provide housekeeping pads and vibration isolators under all new floor-mounted equipment. All equipment shall be installed per the manufacturer's recommendations.

(c) All make-up and outside air shall be filtered and pre-conditioned prior to being introduced into the HVAC systems.

(d) Provide separate stand-alone systems independent of building HVAC system for UPS Room and Telecommunications Room.

(e) Vestibule shall be designed to insure positive pressurization for the building HVAC system.

(f) Provide ventilation system for Mechanical Room # 50 and Electrical Room # 51 with design temperature of 10°F above ambient for summer and 55°F for winter.

(g) Provide natural gas radiant heating in apparatus bays.

##### 6.11.2 Energy Supply

6.11.2.1 Gas piping and components may be used for the appliances in this building. For heating, the energy source of choice is natural gas.

6.11.2.2 Heat Generating Systems - The heating load for this facility shall be serviced by providing 100% of the load. Provide insulation on any chilled water equipment.

6.11.2.3 Air Distribution, Heating & Cooling - Provide system flushing and start-up for any waterside systems.

6.11.2.4 Other Distribution Systems - Provide an automatic chemical treatment system for any waterside systems.

#### 6.11.3 Water Quality Analysis and Treatment:

(a) Water quality for Fort Polk and surrounding area is 'hard'. Treatment will be required for use as make-up water in HVAC equipment. Water Quality Analysis reports are inserted as Appendix GG.

(b) Contractor shall coordinate with water treatment contractor to confirm current water treatment methods to obtain the required quantity and types of chemicals to be initially introduced into the closed loop heating and chilled water systems.

6.11.4 Boiler Equipment Preferences: Preferences are for Clever Brooks, Ajax or Bryan boiler equipment.

6.11.5 HVAC Equipment Preferences: Preferences are for Trane or York equipment. Roof mounted HVAC equipment not preferred but it may be provided; see architectural requirements.

6.11.5.1 Provide an emergency shutoff switch that allows HVAC control system to immediately shut down the air distribution system throughout the building except where interior pressure and airflow control would more efficiently prevent the spread of airborne contaminants and/or ensure the safety of egress pathways as per UFC 4-010-01. Coordinate this requirement and switch features with local Fort Polk DPW during design. In accordance with UFC 4-010.01, provide all outside air intakes, relief air, and exhaust openings with low leakage dampers that automatically close when the emergency shutoff switch is activated. The recommended low leakage dampers have maximum leakage rates of 3 cfm/square foot with a differential pressure of one inch of water gage across the damper.

6.11.5.2 Provide vehicle exhaust units in the apparatus bays. The vehicle exhaust systems shall be an approved equal to the Airvac 911 Engine Exhaust Removal System. See Airvac brochure in Appendix OO.

#### 6.12. ENERGY CONSERVATION

#### 6.12.1. General

##### 6.12.1 Design Energy Target/Energy Budget

6.12.1.1 An energy study shall be conducted (by the successful Bidder) for the Modified Two Company Headquarters Fire Station, in accordance with ASHRAE 90.1. The building shall comply with EPACT 05 requirements of 40% better than ASHRAE 90.1, Energy Star purchase requirements and advance metering requirements. Pricing shall be provided to achieve a 50% building energy reduction

6.12.1.2 The building schedule for calculations is 12 hours/day, 7 days/week.

#### **(AM004) Renumbered**

##### 6.12.1.3 Energy Sources.

6.12.1.3.1 Electricity and Natural Gas are available to the site. Central district heating and cooling utilities are not available from a Central Energy Plant for this site.

6.12.1.3.2 Rate structures for all available utilities shall be confirmed with the installation energy personnel. Refer to Appendix K for Utility Rates provided by Ft Polk.

6.12.1.3.3 An LCCA must be performed by the Contractor and submitted to the Contracting Officer for review.

#### **(/AM004)**

6.12.2. Inclusion of Renewable Energy Features. The following renewable energy features have been determined lifecycle cost effective, are included in the project budget and shall be provided:

No project specific requirements.

#### 6.13. FIRE PROTECTION

6.13.1 Fire Protection Design References, Codes, and Standards. The design and construction of the fire protection systems for the Fire Station Headquarters shall be in compliance with Standard Design Criteria in Para 3.2.9, design criteria listed in Para 4 (latest edition), as required herein, Ft Polk Fire Department Consideration in Appendix NN and the design criteria listed below.

- MSS-SP 69 Latest Edition
- UFC 3-600-01 and all applicable NFPA Standards

6.13.2 Sprinkler service does not require metering. The sprinkler service main shall be provided with an exterior post indicator valve with tamper switch reporting to the fire alarm control panel (FACP). The sprinkler entry riser shall include a double check backflow preventer and a wall hydrant for testing of backflow preventer. The sprinkler system shall include an indicating control valve, an alarm check valve, a water motor alarm and a flow switch reporting to the FACP. All control valves shall be OS&Y type and shall be provided with tamper switches connected to the FACP.



6.13.3 Backflow Preventer. A backflow preventer shall be provided on the fire water main serving each building. This shall be located within the building. An exterior wall hydrant with OS&Y valve shall be provided to allow testing of backflow preventer at design flow as required by NFPA 13 latest edition.

6.13.4 Fire Department Connection. A fire department connection (FDC) must be provided for the facility. The FDC must be located within 150 feet of hydrant and be accessible. Facilities with FDCs for sprinkler or standpipe systems must be provided with suitable all-weather ground access surface for pumper apparatus within 150 feet of such FDCs. Seeded areas are not considered all weather access. FDC shall be marked as a "Fire Lane" without any parking or landscaping to obstruct access.

6.13.5 Kitchen equipment and exhaust systems shall meet the requirements of UFC 3-600-01 and NFPA 96. The grease removal devices, hoods, duct system and the cooking equipment served by the hood will be protected by a wet chemical system approved for protecting kitchen equipment. The extinguishing system will be monitored by a separate zone on the fire alarm control panel and will activate the building fire alarm system upon discharge. Activation of the extinguishing system will cause automatic shut off of all sources of fuel and heat to the equipment per NFPA 96.

6.13.6 Fire Water Supply.

6.13.6.1 Refer to Appendix D for the Results of Fire Flow Tests in this area.

6.13.6.2 After contract award, the Contractor shall perform a fire hydrant water flow test at the site to confirm that the resulting available fire flow is adequate to support the fire protection requirements of this project. During fire flow demands, the exterior water distribution system shall not be drawn down below 20 psi.

6.13.6.3 Fire Hydrants. Fire hydrants shall be located within 250 feet of all points of the proposed building. FDC, PIV appurtenances shall not be blocked from view or access.

6.13.7 Riser Location - Fire risers shall be installed in dedicated space or mechanical room with external access for fire department. Ft Polk prefers riser be secured within a fence to help avoid tampering.

6.13.8 HVAC Equipment Restart - After a fire alarm shut-down is cleared at fire alarm panel, affected mechanical equipment shall automatically restart.

6.13.9 Sprinkler Freeze Protection: Provide temperature sensor and alarm to notify fire department of possible freezing conditions for wet pipe sprinkler systems in spaces where heat may not be available due to being unoccupied or heating system may have failed in compliance with UFC 3-600-01.

#### 6.14. SUSTAINABLE DESIGN

6.14.1. LEED Rating Tool Version. This project shall be executed using LEED-NC Version 3.

6.14.2. The minimum requirement for this project is to achieve LEED Silver level. Each non-exempt facility (building plus sitework) must achieve this level. In addition to any facilities indicated as exempt in paragraph 3, the following facilities are exempt from the minimum LEED achievement requirement: None.

6.14.3. Credit Validation: LEED registration, compiling of documentation at LEED OnLine and use of the LEED Letter Templates is required. Registration and payment of registration fees will be by the Contractor. Administration/team management of the online project will be by the Contractor. Validation of credits will be accomplished by the Government. LEED certification of the project by the Contractor is not required. The Government may choose to seek LEED certification of the project, in which case the Government will pay certification fees and coordinate with the GBCI and the Contractor will furnish audit data as requested at no additional cost.

6.14.4. Commissioning: See Appendix M for Owner's Project Requirements document(s).

6.14.5. LEED Credits Coordination. The following information is provided relative to Sustainable Sites and other credits.

**SS Credit 1 Site Selection:**

Project site IS NOT considered prime farmland.

Project site is five feet or more above 100-year flood elevation.

Project site contains no habitat for threatened or endangered species.

No portion of project site lies within 100 feet of any water, wetlands or areas of special concern.

Project site WAS NOT previously used as public parkland.

**SS Credit 2 Development Density & Community Connectivity.**

Project site DOES NOT meets the criteria for this credit.

**SS Credit 3 Brownfield Redevelopment.**

Project site DOES NOT meets the criteria for this credit.

**SS Credit 4.1 Public Transportation Access.**

Project site DOES NOT meets the criteria for this credit.

**EA Credit 6 Green Power.**

35% of the project's electricity WILL NOT be provided through an Installation renewable energy contract. Do not purchase Renewable Energy Credits (REC's) to earn this credit.

**MR Credit 2 Construction Waste Management.**

The Installation does not have an on-post recycling facility available for Contractor's use.

**Regional Priority Credits (Version 3 only)**

The project zip code is 71459.

6.14.6. LEED Credit Preferences, Guidance and Resources. See Appendix L LEED Project Credit Guidance for supplemental information relating to individual credits.

6.14.7. Not Used

6.14.8. Additional Information

There are no project specific requirements for the Modified Two Company Headquarters Fire Station.

The project is required to meet LEED Silver requirements. Prerequisite credits are not listed, and are expected to be met for this project. Please refer to Army guidance on LEED Implementation and LEED Project Credit Guidance.

**POST AWARD CONFERENCE/DBB PRE-DESIGN CONFERENCE.** The Designer of Record will ensure that all team members (including Users and Installation staff) have a basic understanding of LEED and provide overview training for those that do not. A conference will be held and the conference agenda will include discussion of LEED roles and responsibilities, goals and compliance requirements, coordination issues including assignment of LEED Online team memberships for district, COS and installation representatives for review purposes, discussion of possible problem areas, and review of documentation requirements. Meeting attendees will include all designers of record, all design team and construction team assigned project LEED APs, construction contractor (if applicable) and USACE Project Manager. COS (if applicable), User and Installation Representative(s) including planning and maintenance staff will be invited to attend.

**DESIGN DOCUMENTS.** LEED credit requirements will be incorporated into drawings and specifications, including all required construction phase documentation (as defined in LEED Submittals document).

**LEED SUPPORTING DOCUMENTATION.** Supporting documentation is a separable portion of Design Analysis provided with each required design submittal. Each design submittal will include the LEED Project Checklist identifying all credits claimed. Final design submittal for each portion of the work will include all required design documentation (as defined in LEED Submittals document) for that portion of the work (example - all site credit design documentation with final site design). For registered projects all design documentation will be uploaded to LEED Online when final design is submitted.

The following Credits are considered Mandatory for Army projects:

Sustainable Sites, Credit 6.1 Stormwater Design: Quantity Control

Sustainable Sites, Credit 6.2 Stormwater Design: Quality Control

Water Efficiency, Credit 1 Water Efficient Landscaping

Water Efficiency, Credit 3 Innovative Wastewater Technologies

Energy & Atmosphere, Credit 1 Optimize Energy Performance

Energy & Atmosphere, Credit 3 Enhanced Commissioning

Energy & Atmosphere, Credit 5 Measurement & Verification

Materials and Resources, Credit 2 Construction Waste Management: Divert 50% From Disposal

Materials and Resources, Credit 4 Recycled Content: 10% (post-consumer + 1/2 pre-consumer)

Indoor Environmental Quality, Credit 3.1 Construction IAQ Management Plan, During Construction

Indoor Environmental Quality, Credit 3.2 Construction IAQ Management Plan, Before Occupancy

Indoor Environmental Quality, Credit 7.1 Thermal Comfort, Design

ENERGY AND WATER EMPHASIS. Starting with the FY13 program, all buildings with a LEED-NC Silver achievement requirement will earn at least 40% of the points required for Silver from credits that contribute to energy and water conservation, which are defined as the following:

Sustainable Site (SS) 7 Heat Island Effect

SS8 Light Pollution

All Water Efficiency (WE) credits

Energy and Atmosphere (EA) 1 Optimize Energy

EA2 On-Site Renewable Energy

EA3 Enhanced Commissioning

EA5 Measurement & Verification

EA6 Green Power

Indoor Environmental Quality (IEQ) 1 Outside Air Delivery Monitoring

IEQ8.1 Daylighting

Any ID Innovation and Regional Priority (RP) credits achieved for energy or water savings

REQUIRED CREDITS. Include the following credits in all MCA projects where applicable:

SS6 Storm water Design (Quantity and Quality)

WE1 Water Efficient Landscaping – no potable water used for irrigation

WE3 Water Use Reduction – at least 30% reduction

EA1 Optimize Energy – at least 40% reduction new construction, at least 35% reduction existing building renovations

EA3 Enhanced Commissioning

EA5 Measurement & Verification

MR2 Construction Waste Management

MR4 Recycled Content

IEQ3 Construction IAQ management (both During Construction and Before Occupancy)

## IEQ7.1 Thermal Comfort Design

The following are preferred credits for Fort Polk specifically:

Sustainable Sites, Credit 1 Site Selection

Sustainable Sites, Credit 4.2 Alternative Transportation: Bicycle Storage and Changing Rooms

Sustainable Sites, Credit 5.1 Site Development: Protect or Restore Habitat

Sustainable Sites, Credit 7.1 Heat Island Effect: Non-Roof

Sustainable Sites, Credit 7.1 Heat Island Effect: Roof

Sustainable Sites, Credit 8 Light Pollution Reduction

Water Efficiency, Credit 2 Water Use Reduction

Energy & Atmosphere, Credit 4 Enhanced Refrigerant Management

Materials and Resources, Credit 4 Recycled Content: 20% (post-consumer + 1/2 pre-consumer)

Indoor Environmental Quality, Credit 4.1 Low Emitting Materials: Adhesives & Sealants

Indoor Environmental Quality, Credit 4.2 Low Emitting Materials: Paints & Coatings

Indoor Environmental Quality, Credit 4.3 Low Emitting Materials: Carpet/Flooring Systems

Indoor Environmental Quality, Credit 4.4 Low Emitting Materials: Wood & Agrifiber Products

Indoor Environmental Quality, Credit 8.1 Daylight & Views (Daylighting)

Innovation and Design Process, Credit 2 LEED Accredited Professional

Regional Priority

## 6.15. ENVIRONMENTAL

6.15.1 A Record of Environmental Consideration (REC) has been issued. Refer to Appendix E for Environmental Information including copy of the REC. The D/B Contractor shall comply with all Federal, State, and Local environmental requirements. Contractor environmental information is included in Appendix BB.

6.15.1.1 Sediment Basin. If a temporary sediment basin is required, it shall be designed and installed prior to any/all construction. The sediment basin shall accommodate a 25 year rain event. The size shall be based upon the square footage of watershed that the basin will be receiving. Project site area is approximately ten acres. The basin shall serve two functions – 1) capture sediments during the construction of the facility and its associated developments and 2) allow water to exit the site in manner to prevent erosion.

6.15.1.2 Tree Removal. Prior to any construction, the D/B contractor shall coordinate tree removal with Ft Polk Environmental. The D/B contractor shall be responsible for a survey of construction area, for locating and marking trees to be removed from the site based upon the survey. The D/B contractor shall allow for a two (2) week period for coordination with Ft Polk Environmental to have trees removed as designated.

6.15.2 Erosion control. All material shall be contained on site. All dirt piles must be seeded if left unused for more than 20 days. Rye grass shall not be used as a permanent source of grassing.

6.15.3 Refer to Fort Polk IDG for acceptable plant species for use on the landscape plan.

#### 6.16. PERMITS

6.16.1 All permits shall be obtained and permit fees paid for by the Contractor at no additional expense to the Government.

#### 6.17. DEMOLITION

Demolition of the entire existing Fire Station Complex as shown in Appendix J will be required as a part of this contract (C-102), after the Fire Department has moved into the new Fire Station. Existing building REC's can be found in Appendix PP. Demolition on the proposed project site includes the removal of pavement, curb and gutter, drainage culverts, concrete heliopad, and a section of Missouri Ave, (Appendix J).

#### 6.18. ADDITIONAL FACILITIES

There are no additional facilities with this project.

End of Section 01 10 00.1005

**SECTION 01 33 00.1005  
SUBMITTAL PROCEDURES  
(DESIGN-BUILD TASK ORDERS)**

**1.0 GENERAL**

1.13. GOVERNMENT APPROVED OR CONCURRED WITH SUBMITTALS

1.14. INFORMATION ONLY SUBMITTALS

**1.0 GENERAL**

1.1.1. This section contains requirements specifically applicable to this task order. The requirements of Base ID/IQ contract Section 01 33 30 apply to this task order, except as otherwise specified herein.

**1.13. GOVERNMENT APPROVED OR CONCURRED WITH SUBMITTALS**

Upon completion of review of submittals requiring Government approval or concurrence, the Government will stamp and date the submittals as approved or concurred. The Government will retain one (1) copies of the submittal and return one (1) copy(ies) of the submittal.

**1.14. INFORMATION ONLY SUBMITTALS**

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. The Government will retain one (1) copies of information only submittals.

End of Section 01 33 00.1005



**SECTION 01 33 16  
DESIGN AFTER AWARD**

**1.0 GENERAL INFORMATION**

1.1. INTRODUCTION

1.2. DESIGNER OF RECORD

**2.0 PRODUCTS (Not Applicable)**

**3.0 EXECUTION**

3.1. PRE-WORK ACTIVITIES & CONFERENCES

3.1.1. Design Quality Control Plan

3.1.2. Post Award Conference

3.1.3. Partnering & Project Progress Processes

3.1.4. Initial Design Conference

3.1.5. Pre-Construction Conference

3.2. STAGES OF DESIGN SUBMITTALS AND OVER THE SHOULDER PROGRESS REVIEWS

3.2.1. Site/Utilities

3.2.2. Interim Design Submittals

3.2.3. Over-the-Shoulder Progress Reviews

3.2.4. Final Design Submissions

3.2.5. Design Complete Submittals

3.2.6. Holiday Periods for Government Review or Actions

3.2.7. Late Submittals and Reviews

3.3. DESIGN CONFIGURATION MANAGEMENT

3.3.1. Procedures

3.3.2. Tracking Design Review Comments

3.3.3. Design and Code Checklists

3.4. INTERIM DESIGN REVIEWS AND CONFERENCES

3.4.1. General

3.4.2. Procedures

- 3.4.3. Conference Documentation
- 3.5. INTERIM DESIGN REQUIREMENTS
  - 3.5.1. Drawings
  - 3.5.2. Design Analyses
  - 3.5.3. Geotechnical Investigations and Reports
  - 3.5.4. LEED Documentation
  - 3.5.5. Energy Conservation
  - 3.5.6. Specifications
  - 3.5.7. Building Rendering
  - 3.5.8. Interim Building Design Contents
- 3.6. FINAL DESIGN REVIEWS AND CONFERENCES
- 3.7. FINAL DESIGN REQUIREMENTS
  - 3.7.1. Drawings
  - 3.7.2. Design Analysis
  - 3.7.3. Specifications
  - 3.7.4. Submittal Register
  - 3.7.5. Preparation of DD Form 1354 (Transfer of Real Property)
  - 3.7.6. Acceptance and Release for Construction
- 3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS
- 3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES
  - 3.9.1. Submittal Distribution and Quantities
  - 3.9.2. Web based Design Submittals
  - 3.9.3. Mailing of Design Submittals
- 3.10. AS-BUILT DOCUMENTS

**ATTACHMENT A STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS**

**ATTACHMENT B FURNITURE, FIXTURES AND EQUIPMENT REQUIREMENTS**

**ATTACHMENT C TRACKING COMMENTS IN DRCHECKS**

**ATTACHMENT D SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW**

**ATTACHMENT E LEED SUBMITTALS**

**ATTACHMENT F BUILDING INFORMATION MODELING REQUIREMENTS**

**ATTACHMENT G DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT**

## **1.0 GENERAL INFORMATION**

### **1.1. INTRODUCTION**

1.1.1. The information contained in this section applies to the design required after award. After award, the Contractor will develop the accepted proposal into the completed design, as described herein.

1.1.2. The Contractor may elect to fast track the design and construction that is, proceed with construction of parts of the sitework and facilities prior to completion of the overall design. To facilitate fast tracking, the Contractor may elect to divide the design into no more than six (6) design packages per major facility type and no more than three (3) design packages for site and associated work. Designate how it will package the design, consistent with its overall plan for permitting (where applicable) and construction of the project. See Sections 01 33 00 SUBMITTAL PROCEDURES and 01 32 01.00 10 PROJECT SCHEDULE for requirements for identifying and scheduling the design packaging plan in the submittal register and project schedule. See also Sections 01 10 00 STATEMENT OF WORK and 01 57 20.00 10 ENVIRONMENTAL PROTECTION for any specified permit requirements. If early procurement of long-lead item construction materials or installed equipment, prior to completion of the associated design package, is necessary to facilitate the project schedule, also identify those long-lead items and how it will assure design integrity of the associated design package to meet the contract requirements (The Contract consists of the Solicitation requirements and the accepted proposal). Once the Government is satisfied that the long-lead items meet the contract requirements, the Contracting Officer will allow the Contractor to procure the items at its own risk.

1.1.3. The Contractor may proceed with the construction work included in a separate design package after the Government has reviewed the final (100%) design submission for that package, review comments have been addressed and resolved to the Government's satisfaction and the Contracting Officer (or the Administrative Contracting Officer) has agreed that the design package may be released for construction.

1.1.4. **INTEGRATED DESIGN.** To the maximum extent permitted for this project, use a collaborative, integrated design process for all stages of project delivery with comprehensive performance goals for siting, energy, water, materials and indoor environmental quality and ensures incorporation of these goals. Consider all stages of the building lifecycle, including deconstruction.

### **1.2. DESIGNER OF RECORD**

Identify, for approval, the Designer of Record ("DOR") that will be responsible for each area of design. One DOR may be responsible for more than one area. Listed, Professional Registered, DOR(s) shall account for all areas of design disciplines. The DOR's shall stamp, sign, and date each design drawing and other design deliverables under their responsible discipline at each design submittal stage (see contract clause Registration of Designers). If the deliverables are not ready for release for construction, identify them as "preliminary" or "not for release for construction" or by using some other appropriate designation. The DOR(s) shall also be responsible for maintaining the integrity of the design and for compliance with the contract requirements through construction and documentation of the as-built condition by coordination, review and approval of extensions of design, material, equipment and other construction submittals, review and approval or disapproval of requested deviations to the accepted design or to the contract, coordination with the Government of the above activities, and by performing other typical professional designer responsibilities.

## **2.0 PRODUCTS (Not Applicable)**

## **3.0 EXECUTION**

### **3.1. PRE-WORK ACTIVITIES & CONFERENCES**

### 3.1.1. Design Quality Control Plan

Submit for Government acceptance, a Design Quality Control Plan in accordance with Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL before design may proceed.

### 3.1.2. Post Award Conference

3.1.2.1. The government will conduct a post award contract administration conference at the project site, as soon as possible after contract award. This will be coordinated with issuance of the contract notice to proceed (NTP). The Contractor and major sub-contractor representatives shall participate. All designers need not attend this first meeting. Government representatives will include COE project delivery team members, facility users, facility command representatives, and installation representatives. The Government will provide an agenda, meeting goals, meeting place, and meeting time to participants prior to the meeting.

3.1.2.2. The post award conference shall include determination and introduction of contact persons, their authorities, contract administration requirements, discussion of expected project progress processes, and coordination of subsequent meetings for quality control (see Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL), Partnering (see below and SCR: Partnering), and the initial design conference (see below).

3.1.2.3. The government will introduce COE project delivery team members, facility users, facility command representatives, and installation representatives. The DB Contractor shall introduce major subcontractors, and other needed staff. Expectations and duties of each person shall be defined for all participants. A meeting roster shall be developed and distributed by the government with complete contact information including name, office, project role, phone, mailing and physical address, and email address.

### 3.1.3. Partnering & Project Progress Processes

3.1.3.1. The initial Partnering conference may be scheduled and conducted at any time with or following the post award conference. The Government proposes to form a partnership with the DB Contractor to develop a cohesive building team. This partnership will involve the COE project delivery team members, facility users, facility command representatives, installation representatives, Designers of Record, major subcontractors, contractor quality control staff, and contractor construction management staff. This partnership will strive to develop a cooperative management team drawing on the strengths of each team member in an effort to achieve a quality project within budget and on schedule. This partnership will be bilateral in membership and participation will be totally voluntary. All costs, excluding labor and travel expenses, shall be shared equally between the Government and the Contractor. The Contractor and Government shall be responsible for their own labor and travel costs. Normally, partnering meetings will be held at or in the vicinity of the project installation.

3.1.3.2. As part of the partnering process, the Government and Contractor shall develop, establish, and agree to comprehensive design development processes including conduct of conferences, expectations of design development at conferences, fast-tracking, design acceptance, Structural Interior Design (SID)/ Furniture, Fixtures & Equipment (FF&E) design approval, project closeout, etc. The government will explain contract requirements and the DB Contractor shall review their proposed project schedule and suggest ways to streamline processes.

### 3.1.4. Initial Design Conference

The initial design conference may be scheduled and conducted at the project installation any time after the post award conference, although it is recommended that the partnering process be initiated with or before the initial design conference. Any design work conducted after award and prior to this conference should be limited to site and is discouraged for other items. All Designers of Record shall participate in

the conference. The purpose of the meeting is to introduce everyone and to make sure any needs the contractor has are assigned and due dates established as well as who will get the information. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning the BIM Implementation Plan demonstration at this meeting. The DB Contractor shall conduct the initial design conference.

### 3.1.5. Pre-Construction Conference

Before starting construction activities, the Contractor and Government will jointly conduct a pre-construction administrative conference to discuss any outstanding requirements and to review local installation requirements for start of construction. It is possible there will be multiple Pre-Construction Conferences based on the content of the design packages selected by the Contractor. The Government will provide minutes of this meeting to all participants.

## 3.2. STAGES OF DESIGN SUBMITTALS AND OVER THE SHOULDER PROGRESS REVIEWS

The stages of design submittals described below define Government expectations with respect to process and content. The Contractor shall determine how to best plan and execute the design and review process for this project, within the parameters listed below. As a minimum, the Government expects to see at least one interim design submittal, at least one final design submittal before construction of a design package may proceed and at least one Design Complete submittal that documents the accepted design. The Contractor may sub-divide the design into separate packages for each stage of design and may proceed with construction of a package after the Government accepts the final design for that package. See discussion on waivers to submission of one or more intermediate design packages where the parties partner during the design process. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning BIM and the various stages of design submittals and over-the-shoulder progress reviews.

### 3.2.1. Site/Utilities

To facilitate fast-track design-construction activities the contractor may submit a final (100%) site and utility design as the first design submittal or it may elect to submit interim and final site and utility design submittals as explained below. Following review, resolution, and incorporation of all Government comments, and submittal of a satisfactory set of site/utility design documents, after completing all other pre-construction requirements in this contract and after the pre-construction meeting, the Government will allow the Contractor to proceed with site development activities, including demolition where applicable, within the parameters set forth in the accepted design submittal. For the first site and utility design submission, whether an interim or final, the submittal review, comment, and resolution times from this specification apply, except that the Contractor shall allow the Government a 14 calendar day review period, exclusive of mailing time. No on-site construction activities shall begin prior to written Government clearance to proceed.

### 3.2.2. Interim Design Submittals

The Contractor may submit either a single interim design for review, representing a complete package with all design disciplines, or split the interim design into smaller, individual design packages as it deems necessary for fast-track construction purposes. As required in Section 01 32 01.00 10 PROJECT SCHEDULE, the Contractor shall schedule its design and construction packaging plan to meet the contract completion period. This submission is the Government's primary opportunity to review the design for conformance to the solicitation and to the accepted contract proposal and to the Building Codes at a point where required revisions may be still made, while minimizing lost design effort to keep the design on track with the contract requirements. The requirements for the interim design review submittals and review conferences are described hereinafter. This is not necessarily a hold point for the design process; the Contractor may designate the interim design submittal(s) as a snapshot and proceed with design development at its own risk. See below for a waiver, where the parties establish an effective

over-the-shoulder progress review procedure through the partnering process that would eliminate the need for or expedite a formal intermediate design review on one or more individual design packages.

### 3.2.3. Over-the-Shoulder Progress Reviews

To facilitate a streamlined design-build process, the Government and the Contractor may agree to one-on-one reviewer or small group reviews, electronically, on-line (if available within the Contractor's standard design practices) or at the Contractor's design offices or other agreed location, when practicable to the parties. The Government and Contractor will coordinate such reviews to minimize or eliminate disruptions to the design process. Any data required for these reviews shall normally be provided in electronic format, rather than in hard copy. If the Government and Contractor establish and implement an effective, mutually agreeable partnering procedure for regular (e.g., weekly) over-the-shoulder review procedures that allow the Government reviewers the opportunity to keep fully informed of the progress, contents, design intent, design documentation, etc. of the design package, the Government will agree to waive or to expedite the formal intermediate design review period for that package. The Contractor shall still be required to submit the required intermediate design documentation, however the parties may agree to how that material will be provided, in lieu of a formal consolidated submission of the package. It should be noted that Government funding is extremely limited for non-local travel by design reviewers, so the maximum use of virtual teaming methods must be used. Some possible examples include electronic file sharing, interactive software with on-line or telephonic conferencing, televideo conferencing, etc. The Government must still perform its Code and Contract conformance reviews, so the Contractor is encouraged to partner with the reviewers to find ways to facilitate this process and to facilitate meeting or bettering the design-build schedule. The Contractor shall maintain a fully functional configuration management system as described herein to track design revisions, regardless of whether or not there is a need for a formal intermediate design review. The formal intermediate review procedures shall form the contractual basis for the official schedule, in the event that the partnering process determines that the formal intermediate review process to be best suited for efficient project execution. However, the Government pledges to support and promote the partnering process to work with the Contractor to find ways to better the design schedule.

### 3.2.4. Final Design Submissions

This submittal is required for each design package prior to Government acceptance of that design package for construction. The requirements for the final design submittal review conferences and the Government's acceptance for start of construction are described herein after.

### 3.2.5. Design Complete Submittals

After the final design submission and review conference for a design package, revise the design package to incorporate the comments generated and resolved in the final review conferences, perform and document a back-check review and submit the final, design complete documents, which shall represent released for construction documents. The requirements for the design complete submittals are described hereinafter.

### 3.2.6. Holiday Periods for Government Review or Actions

Do not schedule meetings, Government reviews or responses during the last two weeks of December or other designated Government Holidays (including Friday after Thanksgiving). Exclude such dates and periods from any durations specified herein for Government actions.

### 3.2.7. Late Submittals and Reviews

If the Contractor cannot meet its scheduled submittal date for a design package, it must revise the proposed submittal date and notify the government in writing, at least one (1) week prior to the submittal, in order to accommodate the Government reviewers' other scheduled activities. If a design submittal is

over one (1) day late in accordance with the latest revised design schedule, or if notification of a proposed design schedule change is less than seven (7) days from the anticipated design submission receipt date, the Government review period may be extended up to seven (7) days due to reviewers' schedule conflicts. If the Government is late in meeting its review commitment and the delay increases the Contractor's cost or delays completion of the project, the Suspension of Work and Defaults clauses provide the respective remedy or relief for the delay.

### 3.3. DESIGN CONFIGURATION MANAGEMENT

#### 3.3.1. Procedures

Develop and maintain effective, acceptable design configuration management (DCM) procedures to control and track all revisions to the design documents after the Interim Design Submission through submission of the As-Built documents. During the design process, this will facilitate and help streamline the design and review schedule. After the final design is accepted, this process provides control of and documents revisions to the accepted design (See Special Contract Requirement: Deviating From the Accepted Design). The system shall include appropriate authorities and concurrences to authorize revisions, including documentation as to why the revision must be made. Include the DCM procedures in the Design Quality Control Plan. The DCM data shall be available to the Government reviewers at all times. The Contractor may use its own internal system with interactive Government concurrences, where necessary or may use the Government's "DrChecks Design Review and Checking System" (see below and Attachment C).

#### 3.3.2. Tracking Design Review Comments

Although the Contractor may use its own internal system for overall design configuration management, the Government and the Contractor shall use the DrChecks Design Review and Checking System to initiate, respond to, resolve and track Government design compliance review comments. This system may be useful for other data which needs to be interactive or otherwise available for shared use and retrieval. See Attachment C for details on how to establish an account and set-up the DrChecks system for use on the project.

#### 3.3.3. Design and Code Checklists

Develop and complete various discipline-specific checklists to be used during the design and quality control of each submittal. Submit these completed checklists with each design submittal, as applicable, as part of the project documentation. See Section 01 45 04.00 10 Contractor Quality Control, Attachment D for a Sample Fire Protection and Life Safety Code review checklist and Attachment E for LEED SUBMITTALS.

### 3.4. INTERIM DESIGN REVIEWS AND CONFERENCES

#### 3.4.1. General

At least one interim design submittal, review and review conference is required for each design package (except that, per paragraph 3.2.1, the Contractor may skip the interim design submission and proceed directly to final design on the sitework and utilities package). The DB Contractor may include additional interim design conferences or over-the-shoulder reviews, as needed, to assure continued government concurrence with the design work. Include the interim submittal review periods and conferences in the project schedule and indicate what part of the design work is at what percentage of completion. The required interim design conferences shall be held when interim design requirements are reached as described below. See also Paragraph: **Over-the-Shoulder Progress Reviews** for a waiver to the formal interim design review.

#### 3.4.2. Procedures



After receipt of an Interim Design submission, allow the Government fourteen (14) calendar days after receipt of the submission to review and comment on the interim design submittal. For smaller design packages, especially those that involve only one or a few separate design disciplines, the parties may agree on a shorter review period or alternative review methods (e.g., over-the-shoulder or electronic file sharing), through the partnering process. For each interim design review submittal, the COR will furnish, to the Contractor, a single consolidated, validated listing of all comments from the various design sections and from other concerned agencies involved in the review process using the DrChecks Design Review and Checking System. The review will be for conformance with the technical requirements of the solicitation and the Contractor's RFP proposal. If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he/she must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after receipt of these comments in order that the comment can be resolved. Furnish disposition of all comments, in writing, through DrChecks. The Contractor is cautioned that if it believes the action required by any comment exceeds the requirements of this contract, that it should take no action and notify the COR in writing immediately. The Interim Review conference will be held for each design submittal at the installation. Bring the personnel that developed the design submittal to the review conference. The conference will take place the week after the receipt of the comments by the Contractor. For smaller fast-track packages that involve only a few reviewers, the parties may agree to alternative conferencing methods, such as teleconferencing, or televideo, where available, as determined through Partnering.

#### 3.4.3. Conference Documentation

3.4.3.1. In order to facilitate and accelerate the Government code and contract conformance reviews, identify, track resolution of and maintain all comments and action items generated during the design process and make this available to the designers and reviewers prior to the Interim and subsequent design reviews.

3.4.3.2. The DB Contractor shall prepare meeting minutes and enter final resolution of all comments into DrChecks. Copies of comments, annotated with comment action agreed on, will be made available to all parties before the conference adjourns. Unresolved problems will be resolved by immediate follow-on action at the end of conferences. Incorporate valid comments. The Government reserves the right to reject design document submittals if comments are significant. Participants shall determine if any comments are critical enough to require further design development prior to government concurrence. Participants shall also determine how to proceed in order to obtain government concurrence with the design work presented.

#### 3.5. INTERIM DESIGN REQUIREMENTS

Interim design deliverables shall include drawings, specifications, and design analysis for the part of design that the Contractor considers ready for review.

##### 3.5.1. Drawings

Include comments from any previous design conferences incorporated into the documents to provide an interim design for the "part" submitted.

##### 3.5.2. Design Analyses

3.5.2.1. The designers of record shall prepare and present design analyses with calculations necessary to substantiate and support all design documents submitted. Address design substantiation required by the applicable codes and references and pay particular attention to the following listed items:

3.5.2.2. For parts including sitework, include site specific civil calculations.

3.5.2.3. For parts including structural work, include structural calculations.

- (a) Identify all loads to be used for design.
- (b) Describe the method of providing lateral stability for the structural system to meet seismic and wind load requirements. Include sufficient calculations to verify the adequacy of the method.
- (c) Provide calculations for all principal roof, floor, and foundation members and bracing and secondary members.
- (d) Provide complete seismic analyses for all building structural, mechanical, electrical, architectural, and building features as dictated by the seismic zone for which the facility is being constructed.
- (e) Computer generated calculations must identify the program name, source, and version. Provide input data, including loads, loading diagrams, node diagrams, and adequate documentation to illustrate the design. The schematic models used for input must show, as a minimum, nodes/joints, element/members, materials/properties, and all loadings, induced settlements/deflections, etc., and a list of load combinations. Include an output listing for maximum/minimum stresses/forces and deflections for each element and the reactions for each loading case and combination.
- (f) See also the Security (Anti-Terrorism) requirements below for members subject to Anti-Terrorist Force Protection (ATFP) and Progressive Collapse requirements.
- (g) Fully coordinate and integrate the overall structural design between two different or interfacing construction types, such as modular and stick-built or multistory, stacked modular construction. Provide substantiation of structural, consolidation/settlement analysis, etc., as applicable, through the interfaces.

3.5.2.4. For Security (Anti-Terrorism): Provide a design narrative and calculations where applicable, demonstrating compliance with each of the 22 standards in UFC 4-010-01, which includes Design of Buildings to Resist Progressive Collapse (use the most recent version of UFC 4-023-03, regardless of references to any specific version in UFC 4-010-01). Where sufficient standoff distance is not being provided, show calculations for blast resistance of the structural system and building envelope. Show complete calculations for members subjected to ATFP loads, e.g., support members of glazed items (jambs, headers, sills) connections of windows to support members and connections of support members to the rest of the structure. For 3 story and higher buildings, provide calculations to demonstrate compliance with progressive collapse requirements.

3.5.2.5. For parts including architectural work, include building floor area analysis.

3.5.2.6. For parts including mechanical work, include HVAC analysis and calculations. Include complete design calculations for mechanical systems. Include computations for sizing equipment, compressed air systems, air duct design, and U-factors for ceilings, roofs and exterior walls and floors. Contractor shall employ commercially available energy analysis techniques to determine the energy performance of all passive systems and features. Use of hourly energy load computer simulation is required (see paragraph 3.5.5.2 for list of acceptable software). Based on the results of calculations, provide a complete list of the materials and equipment proposed with the manufacturer's published cataloged product installation specifications and roughing-in data.

3.5.2.7. For parts including life safety, include building code analysis and sprinkler and other suppression systems. Notwithstanding the requirements of the Codes, address the following:

- (a) A registered fire protection engineer (FPE) must perform all fire protection analyses. Provide the fire protection engineer's qualifications. See Section 01 10 00, paragraph 5 for qualifications.
- (b) Provide all references used in the design including Government design documents and industry standards used to generate the fire protection analysis.
- (c) Provide classification of each building in accordance with fire zone, building floor areas and height and number of stories.

(d) Provide discussion and description of required fire protection requirements including extinguishing equipment, detection equipment, alarm equipment and water supply. Alarm and detection equipment shall interface to requirements of Electronic Systems.

(e) Provide hydraulic calculations based on water flow test for each sprinkler system to insure that flow and pressure requirements can be met with current water supply. Include copies of Contractor's water flow testing done to certify the available water source.

3.5.2.8. For parts including plumbing systems:

(a) List all references used in the design.

(b) Provide justification and brief description of the types of plumbing fixtures, piping materials and equipment proposed for use.

(c) Detail calculations for systems such as sizing of domestic hot water heater and piping; natural gas piping; LP gas piping and tanks, fuel oil piping and tanks, etc., as applicable.

(d) When the geotechnical report indicates expansive soils are present, indicate in the first piping design submittal how piping systems will be protected against damage or backfall/backflow due to soil heave (from penetration of slab to the 5 foot building line).

3.5.2.9. For elevator systems:

(a) List all criteria codes, documents and design conditions used.

(b) List any required permits and registrations for construction of items of special mechanical systems and equipment.

3.5.2.10. For parts including electrical work, include lighting calculations to determine maintained foot-candle levels, electrical load analysis and calculations, electrical short circuit and protective device coordination analysis and calculations and arc fault calculations.

3.5.2.11. For parts including telecommunications voice/data (including SIPRNET, where applicable), include analysis for determining the number and placement of outlets

3.5.2.12. For Cathodic Protection Systems, provide the following stamped report by the licensed corrosion engineer or NACE specialist with the first design submission. The designer must be qualified to engage in the practice of corrosion control of buried or submerged metallic surfaces. He/she must be accredited or certified by the National Association of Corrosion Engineers (NACE) as a NACE Accredited Corrosion Specialist or a NACE certified Cathodic Protection Specialist, or must be a registered professional engineer with a minimum of five years experience in corrosion control and cathodic protection. Clearly describe structures, systems or components in soil or water to be protected. Describe methods proposed for protection of each.

3.5.2.13. Air Barrier System: Provide a narrative of the design and installation requirements for the Air Barrier system. As part of the design quality control process an air barrier consultant shall review drawing details to assure that details of critical Air Barrier components are properly detailed and incorporated during the design drawings and process (i.e. window flashing details, penetration in air barrier details, door flashing details, roofing/ceiling barrier interface details and etc.). Furnish the Government written review details and results.

3.5.3. Geotechnical Investigations and Reports:

3.5.3.1. The contractor's licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal. Make this information available as early as possible during the over-the-shoulder progress review process. Summarize the subsurface conditions and provide recommendations for the design of appropriate utilities, foundations, floor slabs, retaining walls, embankments, and pavements. Include compaction requirements for fill and backfill under

buildings, sidewalks, other structures and open areas. Recommend foundation systems to be used, allowable bearing pressures for footings, lateral load resistance capacities for foundation systems, elevations for footings, grade beams, slabs, etc. Provide an assessment of post-construction settlement potential including total and differential. Provide recommendations regarding lateral earth pressures (active, at-rest, passive) to be used in the design of retaining walls. Include the recommended spectral accelerations and Site Class for seismic design along with an evaluation of any seismic hazards and recommendations for mitigation, if required. Include calculations to support the recommendations for bearing capacity, settlement, and pavement sections. Include supporting documentation for all recommended design parameters such as Site Class, shear strength, earth pressure coefficients, friction factors, subgrade modulus, California Bearing Ratio (CBR), etc. Provide earthwork recommendations, expected frost penetration, expected groundwater levels, recommendations for dewatering and groundwater control and the possible presence of any surface or subsurface features that may affect the construction of the project such as sinkholes, boulders, shallow rock, old fill, old structures, soft areas, or unusual soil conditions. Include pH tests, salinity tests, resistivity measurements, etc., required to design corrosion control and grounding systems. Include the raw field data. Arrange a meeting with the Government subsequent to completion and evaluation of the site specific geotechnical exploration to outline any differences encountered that are inconsistent with the Government provided preliminary soils information. Clearly outline differences which require changes in the foundation type, or pavement and earthwork requirements from that possible and contemplated using the Government furnished preliminary soils investigation, which result in a change to the design or construction. Any equitable adjustment is subject to the provisions of the contract's Differing Site Conditions Clause.

3.5.3.2. Vehicle Pavements: The Contractor's geotechnical report shall contain flexible and rigid pavement designs, as applicable for the project, including design CBR and modulus of subgrade reaction and the required compaction effort for subgrades and pavement layers. Provide Information on the types of base course materials available in the area and design strengths.

3.5.3.3. The Contractor and the professional geotechnical engineer consultant shall certify in writing that the design of the project has been developed consistent with the Contractor's final geotechnical report. The certification shall be stamped by the consulting professional geotechnical engineer and shall be submitted with the first design submission. If revisions are made to the initial design submission, a new certification shall be provided with the final design submission.

#### 3.5.4. LEED Documentation:

Assign a LEED Accredited Professional, responsible to track LEED planning, performance and documentation for each LEED credit through construction closeout. Incorporate LEED credits in the plans, specifications and design analyses. Develop LEED supporting documentation as a separable portion of the Design Analysis and provide with each required design submittal. Include the LEED Project checklist for each non-exempt facility (one checklist may be provided for multiple facilities in accordance with the LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects and the LEED SUBMITTALS (Attachment E, herein) with each submittal. Final design submittal for each portion of the work must include all required design documentation relating to that portion of work (example - all site credit design documents with final site design). Submittal requirements are as indicated in Attachment E, LEED SUBMITTALS. Submit all documentation indicated on Attachment E as due at final design at final design submittal (for fast-track projects with multiple final design submittals, this shall be at the last scheduled final design submittal). All project documentation related to LEED shall conform to USGBC requirements for both content and format, including audit requirements and be separate from other design analyses. Maintain and update the LEED documentation throughout project progress to construction closeout and shall compile product data, receipts, calculations and other data necessary to substantiate and support all credits claimed. The Government may audit any or all individual credits. Audit documentation is not required to be submitted unless requested. These requirements apply to all projects. If the project requires the Contractor to obtain USGBC certification, the Contractor shall also be responsible for obtaining USGBC certification and shall provide written evidence of certification with the construction closeout LEED documentation submittal. Install the USGBC building plaque at the location

indicated by the Government upon receipt. If Contractor obtains USGBC interim design review, submit the USGBC review to the Government within 30 days of receipt for information only.

3.5.4.1. LEED Documentation for Technology Solution Set. If the Solicitation provides a Prescriptive Technology Solution Set, use of the Technology Solution set has no effect on LEED documentation requirements. Provide all required LEED documentation, including energy analysis, in accordance with LEED requirements when using the Technology Solution Set.

### 3.5.5. Energy Conservation:

3.5.5.1. Refer to Section 01 10 00, Paragraph 5. Interim and Final Design submittals shall demonstrate that each building including the building envelope, HVAC systems, service water heating, power, and lighting systems meet the Mandatory Provisions and the Prescriptive Path requirements of ASHRAE 90.1. Use Compliance Documentation forms available from ASHRAE and included in the ASHRAE 90.1 User's Manual for this purpose. The Architectural Section of the Design Analysis shall include completed forms titled "Building Envelope Compliance Documentation Parts I and II". The Heating Ventilating and Air Conditioning (HVAC) Section of the Design Analysis shall include a completed form titled "HVAC Simplified Approach Option - Part I" if this approach is allowed by the Standard. Otherwise, the HVAC Section of the Design Analysis shall include completed forms titled "HVAC Mandatory Provisions - Part II" and "HVAC Prescriptive Requirements - Part III". The Plumbing Section of the Design Analysis shall include a completed form titled "Service Water Heating Compliance Documentation". The Electrical Section of the Design Analysis shall include an explanatory statement on how the requirements of ASHRAE 90.1 Chapter 8 Power were met. The Electrical Section of the Design Analysis shall also include a completed form titled "Lighting Compliance Documentation".

3.5.5.2. Interim and Final Design submittals which address energy consuming systems, (heating, cooling, service hot water, lighting, power, etc.) must also include calculations in a separate Energy Conservation Section of the Design Analysis which demonstrate and document (a) the baseline energy consumption for the facility or facilities under contract, that would meet the requirements of ANSI/ASHRAE/IESNA Standard 90.1 and (b) the energy consumption of the facility or facilities under contract utilizing the materials and methods required by this construction contract. Use the USGBC Energy and Atmosphere (EA) Credit 1 compliance template / form or an equivalently detailed form for documenting compliance with the energy reduction requirements. This template / form is titled PERFORMANCE RATING METHOD and is available when the project is registered for LEED. The calculation methodology used for this documentation and analysis shall follow the guidelines set forth in Appendix G of ASHRAE 90.1, with two exceptions: a) receptacle and process loads may be omitted from the calculation; and b) the definition of the terms in the formula for Percentage Improvement found in paragraph G1.2 are modified as follows: Baseline Building Performance shall mean the annual energy consumption calculated for a building design intended for use as a baseline for rating above standard design meeting the minimum requirements of the energy standard, and Proposed Building Performance shall mean annual energy consumption calculated for the proposed building design intended for construction. This calculation shall address all energy consuming systems in a single integrated methodology. Include laboratory fume hoods and kitchen ventilation loads in the energy calculation. They are not considered process loads. Individual calculations for heating, cooling, power, lighting, power, etc. systems will not be acceptable. The following building simulation software is acceptable for use in calculating building energy consumption: Hourly Analysis Program (HAP) by Carrier Corp., TRACE 700 by Trane Corp., DOE-2 by US Department of Energy, EnergyPlus by DOD/DOE.

### 3.5.6. Specifications

Specifications may be any one of the major, well known master guide specification sources. Use only one source. Examples include specifications from MASTERSPEC from the American Institute of Architects, SPECTEXT from Construction Specification Institute or Unified Facility Guide Specifications (UFGS using MASTERFORMAT 2004 numbering system), etc. The UFGS are available through the "Whole Building Design Guide" website, using a websearch engine. Manufacturers' product specifications, utilizing CSI's Manu-Spec, three part format may be used in conjunction with the selected

specifications. The designers of record shall edit and expand the appropriate Specifications to insure that all project design requirements, current code requirements, and regulatory requirements are met. Specifications shall clearly identify, where appropriate, specific products chosen to meet the contract requirements (i.e., manufacturers' brand names and model numbers or similar product information). Note that the UFGS are NOT written for Design-Build and must be edited appropriately. For instance, they assume that the Government will approve most submittals, whereas in Design-Build, the Designer of Record has that action, unless this Solicitation requires Government approval for specific submittals. The Designer of Record should also note that some UFGS sections might either prescribe requirements exceeding the Government's own design standards in applicable references or contain requirements that should be selected where appropriately required by the applicable references. At any rate, where the UFGS are consistent with other major, well known master commercial guide specifications, then generally retain such requirements, as good practices.

#### 3.5.7. Building Rendering

Present and provide a draft color computer, artist, or hand drawn rendering with the conceptual design submittal of the building exterior. Perspective renderings shall include a slightly overhead view of the entire building to encompass elevations and the roof configuration of the building. After Government review and acceptance, provide a final rendering, including the following:

Three (3) 18" x 24" color prints, framed and matted behind glass with project title underneath the print.

One (1) Image file (high resolution) in JPG format on CD for those in the submittal distribution list.

#### 3.5.8. Interim Building Design Contents

The following list represents what the Government considers should be included in the overall completed design for a facility or project. It is not intended to limit the contractor from providing different or additional information as needed to support the design presented, including the require design analyses discussed above. As the Contractor develops individual design packages and submits them for Interim review, include as much of the applicable information for an individual design package as is developed at the Interim design level for review purposes. These pieces shall be developed as the design progresses toward the design complete stage.

##### 3.5.8.1. Lawn and Landscaping Irrigation System

##### 3.5.8.2. Landscape, Planting and Turfing

##### 3.5.8.3. Architectural

- (a) Design Narrative
- (b) Architectural Floor Plans, Typical Wall and Roof Sections, Elevations
- (c) Finish schedule
- (d) All required equipment
- (e) Special graphics requirements
- (f) Door and Window Schedules
- (g) Hardware sets using BHMA designations
- (h) Composite floor plan showing all pre-wired workstations
- (i) Structural Interior Design (SID) package: See ATTACHMENT A for specific requirements
- (j) Furniture, Fixtures & Equipment (FF&E) design package: See ATTACHMENT B for specific requirements

(k) Air Barrier Design: Details of all Air Barrier components, (i.e. window flashing details, penetrations in air barrier details, door flashing details, roofing/ceiling barrier interface details and etc.)

#### 3.5.8.4. Structural Systems. Include:

- (a) Drawings showing principal members for roof and floor framing plans as applicable
- (b) Foundation plan showing main foundation elements where applicable
- (c) Typical sections for roof, floor, and foundation conditions

#### 3.5.8.5. Plumbing Systems

- (a) Show locations and general arrangement of plumbing fixtures and major equipment
- (b) Plan and isometric riser diagrams of all areas including hot water, cold water, waste and vent piping. Include natural gas (and meter as required), (natural gas and meter as required), (LP gas), (fuel oil) and other specialty systems as applicable.
- (c) Include equipment and fixture connection schedules with descriptions, capacities, locations, connection sizes and other information as required

#### 3.5.8.6. HVAC Systems

- (a) Mechanical Floor Plans: The floor plans shall show all principle architectural features of the building which will affect the mechanical design. The floor plans shall also show the following:
  - (1) Room designations.
  - (2) Mechanical legend and applicable notes.
  - (3) Location and size of all ductwork and piping.
  - (4) Location and capacity of all terminal units (i.e., registers, diffusers, grilles, hydronic baseboards).
  - (5) Pre-Fabricated Paint Spray Booth (where applicable to project scope)
  - (6) Paint Preparation Area (where applicable to project scope)
  - (7) Exhaust fans and specialized exhaust systems.
  - (8) Thermostat location.
  - (9) Location of heating/cooling plant (i.e., boiler, chiller, cooling tower, etc).
  - (10) Location of all air handling equipment.
  - (11) Air balancing information.
  - (12) Flue size and location.
  - (13) Piping diagram for forced hot water system (if used).
- (b) Equipment Schedule: Provide complete equipment schedules. Include:
  - (1) Capacity
  - (2) Electrical characteristics
  - (3) Efficiency (if applicable)
  - (4) Manufacturer's name
  - (5) Optional features to be provided
  - (6) Physical size
  - (7) Minimum maintenance clearances

- (a) Details: Provide construction details, sections, elevations, etc., only where required for clarification of methods and materials of design.
- (b) HVAC Controls: Submit complete HVAC controls equipment schedules, sequences of operation, wiring and logic diagrams, Input/Output Tables, equipment schedules, and all associated information. See the Statement of Work for additional specific requirements.

#### 3.5.8.7. Fire Protection and Life Safety.

- (a) Provide plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Include the following types of information:
  - (1) The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair enclosures, exit passageways, etc.
  - (2) The location and coverage of any fire detection systems
  - (3) The location and coverage of any fire suppression systems (sprinkler risers, standpipes, etc.)
  - (4) The location of any other major fire protection equipment
  - (5) Indicate any hazardous areas and their classification
  - (6) Schedule describing the internal systems with the following information: fire hazard and occupancy classifications, building construction type, GPM/square foot sprinkler density, area of operation and other as required
- (b) Working plans and all other materials submitted shall meet NFPA 13 requirements, with respect to required minimum level of detail.

#### 3.5.8.8. Elevators. Provide:

- (a) Description of the proposed control system
- (b) Description, approximate capacity and location of any special mechanical equipment for elevators.

#### 3.5.8.9. Electrical Systems.

- (a) Electrical Floor Plan(s): Show all principle architectural features of the building which will affect the electrical design. Show the following:
  - (1) Room designations.
  - (2) Electrical legend and applicable notes.
  - (3) Lighting fixtures, properly identified.
  - (4) Switches for control of lighting.
  - (5) Receptacles.
  - (6) Location and designation of panelboards. Clearly indicate type of mounting required (flush or surface) and reflect accordingly in specifications.
  - (7) Service entrance (conduit and main disconnect).
  - (8) Location, designation and rating of motors and/or equipment which requires electrical service. Show method of termination and/or connection to motors and/or equipment. Show necessary junction boxes, disconnects, controllers (approximate only), conduit stubs, and receptacles required to serve the motor and/or equipment.
- (b) Building Riser Diagram(s) (from pad-mounted transformer to unit load center panelboard): Indicate the types and sizes of electrical equipment and wiring. Include grounding and metering requirements.



- (c) Load Center Panelboard Schedule(s): Indicate the following information:
  - (1) Panelboard Characteristics (Panel Designation, Voltage, Phase, Wires, Main Breaker Rating and Mounting).
  - (2) Branch Circuit Designations.
  - (3) Load Designations.
  - (4) Circuit Breaker Characteristics. (Number of Poles, Trip Rating, AIC Rating)
  - (5) Branch Circuit Connected Loads (AMPS).
  - (6) Special Features
- (d) Lighting Fixture Schedule(s): Indicate the following information:
  - (1) Fixture Designation.
  - (2) General Fixture Description.
  - (3) Number and Type of Lamp(s).
  - (4) Type of Mounting.
  - (5) Special Features.
- (e) Details: Provide construction details, sections, elevations, etc. only where required for clarification of methods and materials of design.

3.5.8.10. Electronic Systems including the following responsibilities:

- (a) Fire Detection and Alarm System. Design shall include layout drawings for all devices and a riser diagram showing the control panel, annunciator panel, all zones, radio transmitter and interfaces to other systems (HVAC, sprinkler, etc.)
- (b) Fire Suppression System Control. Specify all components of the Fire Suppression (FS) System in the FS section of the specifications. Clearly describe how the system will operate and interact with other systems such as the fire alarm system. Include a riser diagram on the drawings showing principal components and interconnections with other systems. Include FS system components on drawing legend. Designate all components shown on floor plans "FS system components" (as opposed to "Fire Alarm components"). Show location of FS control panels, HVAC control devices, sensors, and 120V power panel connections on floor plans. Indicate zoning of areas by numbers (1, 2, 3) and detectors sub-zoned for cross zoning by letter designations (A and B). Differentiate between ceiling mounted and under floor detectors with distinct symbols and indicate sub-zone of each.
- (c) Public Address System
- (d) Special Grounding Systems. Completely reflect all design requirements in the specifications and drawings. Specifications shall require field tests (in the construction phase), witnessed by the Government, to determine the effectiveness of the grounding system. Include drawings showing existing construction, if any.
- (e) Cathodic Protection.
- (f) Intrusion Detection, Card Access System
- (g) Central Control and Monitoring System
- (h) Mass Notification System
- (i) Electrical Power Distribution Systems

3.5.8.11. Separate detailed Telecommunications drawings for Information Systems including the following responsibilities:

- (a) Telecommunications Cabling

(b) Supporting Infrastructure

(c) Outside Plant (OSP) Cabling - Campus or Site Plans - Exterior Pathways and Inter-Building Backbones

(d) Include a layout of the voice/data outlets (including voice only wall & pay phones) on telecommunication floor plan drawing, location of SIPRNET data outlets (where applicable), and a legend and symbol definition to indicate height above finished floor. Show size of conduit and cable type and size on Riser Diagram. Do not show conduit runs between backboard and outlets on the floor plans. Show underground distribution conduit and cable with sizing from point of presence to entrance facility of building.

(e) Layout of complete building per floor - Serving Zone Boundaries, Backbone Systems, and Horizontal Pathways including Serving Zones Drawings - Drop Locations and Cable ID's

(f) Communication Equipment Rooms - Plan Views - Tech and AMEP/Elevations - Racks and Walls. Elevations with a detailed look at all telecomm rooms. Indicate technology layout (racks, ladder-racks, etc.), mechanical/electrical layout, rack elevation and backboard elevation. They may also be an enlargement of a congested area of T1 or T2 series drawing.

### 3.6. FINAL DESIGN REVIEWS AND CONFERENCES

A final design review and review conference will be held upon completion of final design at the project installation, or – where equipment is available - by video teleconference or a combination thereof, for any design package to receive Government acceptance to allow release of the design package for construction. For smaller separate design packages, the parties may agree on alternative reviews and conferences (e.g., conference calls and electronic file sharing, etc.) through the Partnering process. Include the final design conference in the project schedule and shall indicate what part of the design work is at 100% completion. The final design conference will be held after the Government has had seven (7) calendar days after receipt of the submission to review the final design package and supporting data. For smaller packages, especially those involving only one or a few design disciplines the parties may agree on a shorter period.

### 3.7. FINAL DESIGN REQUIREMENTS

Final design deliverables for a design package shall consist of 100% complete drawings, specifications, submittal register and design analyses for Government review and acceptance. The 100% design submission shall consist of drawings, specifications, updated design analyses and any permits required by the contract for each package submitted. In order to expedite the final design review, prior to the conference, ensure that the design configuration management data and all review comment resolutions are up-to-date. Include the 100% SID and 100% FF&E binders for government approval. The Contractor shall have performed independent technical reviews (ITR's) and back-checks of previous comment resolutions, as required by Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL, including providing documentation thereof. Use DrChecks or other acceptable comment tracking system during the ITR and submit the results with each final design package

#### 3.7.1. Drawings

3.7.1.1. Submit drawings complete with all contract requirements incorporated into the documents to provide a 100% design for each package submitted.

3.7.1.2. Prepare all drawings with the Computer-Aided Design and Drafting (CADD)/Computer-Aided Design (CAD) system, organized and easily referenced electronically, presenting complete construction information.

3.7.1.3. Drawings shall be complete. The Contractor is encouraged to utilize graphics, views, notes, and details which make the drawings easier to review or to construct but is also encouraged to keep such materials to those that are necessary.

3.7.1.4. Provide detail drawings that illustrate conformance with the contract. Include room finish schedules, corresponding color/finish/special items schedules, and exterior finish schedules that agree with the submitted SID binders.

3.7.1.5. The design documents shall be in compliance with the latest version of the A/E/C CAD Standard, available at <https://cadbim.usace.army.mil/CAD>. Use the approved vertical Corps of Engineers title blocks and borders on all drawings with the appropriate firm name included within the title block area.

3.7.1.6. CAD System and Building Information Modeling (BIM) (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order.)

All CAD files shall be fully compatible with MicroStation V8 or higher. Save all design CAD files as MicroStation V8 or higher files. All submitted BIM Models and associated Facility Data shall be fully compatible with Bentley BIM XM or later and the USACE Bentley BIM Workspace [Not Supplied - SubmittalReqCADDSystem : USACE\_WORKSPACE\_VERSION]

(a) CAD Data Final File Format: During the design development capture geo-referenced coordinates of all changes made to the existing site (facility footprint, utility line installations and alterations, roads, parking areas, etc) as a result of this contract. There is no mandatory methodology for how the geo-referenced coordinates will be captured, however, Engineering and Construction Bulletin No. 2006-15, Subject: Standardizing Computer Aided Design (CAD) and Geographic Information Systems (GIS) Deliverables for all Military Design and Construction Projects identifies the format for final as-built drawings and data sets to be delivered to the government. Close-out requirements at the as-built stage; require final geo-referenced GIS Database of the new facility along with all exterior modifications. The Government will incorporate this data set into the Installation's GIS Masterplan or Enterprise GIS System. See also, Section 01 78 02.00 10 Closeout Submittals.

(b) Electronic Drawing Files: In addition to the native CAD design files, provide separate electronic drawing files (in editable CAD format and Adobe Acrobat PDF version 7.0 or higher) for each project drawing.

(c) Each file (both CAD and PDF) shall represent one complete drawing from the drawing set, including the date, submittal phase, and border. Each drawing file shall be completely independent of any data in any other file, including fonts and shapes not included with the basic CAD software program utilized. Fonts that are not included as part of the default CAD software package installation or recognized as an allowable font by the A/E/C CAD Standard are not acceptable in delivered CAD files. All displayed graphic elements on all levels of the drawing files shall be part of the project drawing image. The drawing files shall not contain any graphic element that is not part of the drawing image.

(d) Deliver BIM Model and associated Facility Data files in their native format. At a minimum, BIM files shall address major architecture design elements, major structural components, mechanical systems and electrical/communication distribution and elements as defined in Attachment F. See Attachment F for additional BIM requirements.

(e) Drawing Index: Provide an index of drawings sheet in CAD as part of the drawing set, and an electronic list in Microsoft Excel of all drawings on the CD. Include the electronic file name, the sheet reference number, the sheet number, and the sheet title, containing the data for each drawing.

(f) Hard Copies: Plot submitted hard copy drawings directly from the "electronic drawing files" and copy for quantities and sizes indicated in the distribution list at the end of this specification section. The Designers of Record shall stamp, sign and date original hard copy sheets as Released For Construction, and provide copies for distribution from this set.

### 3.7.2. Design Analyses

3.7.2.1. The designers of record shall update, finalize and present design analyses with calculations necessary to substantiate and support all design documents submitted.

3.7.2.2. The responsible DOR shall stamp, sign and date the design analysis. Identify the software used where, applicable (name, version, vendor). Generally, provide design analyses, individually, in an original (file copy) and one copy for the assigned government reviewer.

3.7.2.3. All disciplines review the LEED design analysis in conjunction with their discipline-specific design analysis; include a copy of the separable LEED design analysis in all design analysis submittals.

3.7.2.4. Do not combine multi-disciplined volumes of design-analysis, unless multiple copies are provided to facilitate multiple reviewers (one copy per each separate design analysis included in a volume).

### 3.7.3. Specifications

Specifications shall be 100% complete and in final form.

### 3.7.4. Submittal Register

Prepare and update the Submittal Register and submit it with the 100% design specifications (see Specification Section 01 33 00, SUBMITTAL PROCEDURES) with each design package. Include the required submittals for each specification section in a design package in the submittal register.

### 3.7.5. Preparation of DD Form 1354 (Transfer of Real Property)

This form itemizes the types, quantities and costs of various equipment and systems that comprise the project, for the purpose of transferring the new construction project from the Corps Construction Division to the Installation's inventory of real property. The Government will furnish the DB Contractor's design manager a DD Form 1354 checklist to use to produce a draft Form 1354. Submit the completed checklist and prepared draft Form DD 1354 with the 100% design in the Design Analysis. The Corps will use these documents to complete the final DD 1354 upon completion of construction.

### 3.7.6. Acceptance and Release for Construction

3.7.6.1. At the conclusion of the Final Design Review (after resolutions to the comments have been agreed upon between DOR and Government reviewers), the Contracting Officer or the ACO will accept the Final Design Submission for the design package in writing and allow construction to start for that design package. The Government may withhold acceptance until all major corrections have been made or if the final design submission requires so many corrections, even though minor, that it isn't considered acceptably complete.

3.7.6.2. Government review and acceptance of design submittals is for contract conformance only and shall not relieve the Contractor from responsibility to fully adhere to the requirements of the contract, including the Contractor's accepted contract proposal, or limit the Contractor's responsibility of design as prescribed under Special Contract Requirement: "Responsibility of the Contractor for Design" or limit the Government's rights under the terms of the contract. The Government reserves the right to rescind inadvertent acceptance of design submittals containing contract deviations not separately and expressly identified in the submittal for Government consideration and approval.

## 3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

After the Final Design Submission and Review Conference and after Government acceptance of the Final Design submission, revise the design documents for the design package to incorporate the comments

generated and resolved in the final review conference, perform and document a back-check review and submit the final, design complete documents. Label the final design complete documents "FOR CONSTRUCTION" or use similar language. In addition to the final drawings and specifications, the following deliverables are required for distribution and field use. The deliverable includes all documentation and supporting design analysis in final form, as well as the final review comments, disposition and the back-check. As part of the quality assurance process, the Government may perform a back-check of the released for construction documentation. Promptly correct any errors or omissions found during the Government back-check. The Government may withhold retainage from progress payments for work or materials associated with a final design package until this submittal has been received and the Government determines that it is complete.

### 3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES

#### 3.9.1. Submittal Distribution and Quantities

General: The documents which the Contractor shall submit to the Government for each submittal are listed and generally described in preceding paragraphs in this Section. Provide copies of each design submittal and design substantiation as follows (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order):

Activity and Address	Drawing Size (Full Size) <b><u>ANSI D</u></b> Full Sets/ *Partial Sets	Design Analyses & Specs Full Sets/ *Partial Sets	Drawing Size (Half Size) <b><u>ANSI B</u></b> Full Sets/ *Partial Sets	Non-BIM Data CD-ROM or DVD as Necessary (PDF & <b><u>.dgn</u></b> )	Furniture Submittal (Per Attachment B)	Structural Interior Design Submittal	BIM Data DVD (Per Attachment F)
Commander, U.S. Army Engineer District <b>[Not Supplied - District Info General : CONSTRUCTION_DISTRICT]</b>	0/0	3/0	6/0	7	1	2	1
Commander, U.S. Army Engineer District, Center of Standardization <b>Huntsville Center</b>	0/0	2/0	2/0	2	0	1	2
Installation	2/0	2/0	2/0	8	2	2	2
U.S. Army Corps of Engineers Construction Area Office	4/0	4/0	4/0	2	1	1	0

Activity and Address	Drawing Size (Full Size) <b><u>ANSI D</u></b> Full Sets/ *Partial Sets	Design Analyses & Specs Full Sets/ *Partial Sets	Drawing Size (Half Size) <b><u>ANSI B</u></b> Full Sets/ *Partial Sets	Non-BIM Data CD-ROM or DVD as Necessary (PDF & <b><u>.dgn</u></b> )	Furniture Submittal (Per Attachment B)	Structural Interior Design Submittal	BIM Data DVD (Per Attachment F)
Information Systems Engineering Command (ISEC)	0/0	0/0	0/0	1	*Partial Set (Work Station/System Furniture- IT Details)	N/A	1
Huntsville Engineer & Support Center, Central Furnishings Program	N/A	N/A	N/A	N/A	1 Interim/Refer to attachment B for the final submission Qty	N/A	N/A
Other Offices	1/0	1/0	1/0	1	N/A	1	1

**\*NOTE: For partial sets of drawings, specifications and design analyses, see paragraph 3.9.3.3, below.**

**\*\*NOTE: When specified below in 3.9.2, furnish Installation copies of Drawings as paper copies, in lieu of the option to provide secure web-based submittals.**

### 3.9.2. Web based Design Submittals

Except for full or half-sized drawings for Installation personnel, as designated in the Table above, Web based design submittals will be acceptable as an alternative to the paper copies listed in the Table above, provided a single hard-copy PDF based record set is provided to the Contracting Officer for record purposes. Where the contract requires the Contractor to submit documents to permitting authorities, still provide those authorities paper copies (or in an alternate format where required by the authority). Web based design submittal information shall be provided with adequate security and availability to allow unlimited access those specifically authorized to Government reviewers while preventing unauthorized access or modification. File sizes must be of manageable size for reviewers to quickly download or open on their computers. As a minimum, drawings shall be full scale on American National Standards Institute (ANSI) D sheets (34" x 22"). In addition to the optional website, provide the BIM data submission on DVD to each activity and address noted above in paragraph 3.9.1 for each BIM submission required in Attachment F.

### 3.9.3. Mailing of Design Submittals

3.9.3.1. Mail all design submittals to the Government during design and construction, using an overnight mailing service. The Government will furnish the Contractor addresses where each copy shall be mailed to after award of the contract (or individual task order if this is an indefinite delivery/indefinite quantity, task order contract). Mail the submittals to seven (7) different addresses. Assemble drawing sheets, specs, design analyses, etc. into individual sets; do not combine duplicate pages from individual sets so that the government has to assemble a set.

3.9.3.2. Each design submittal shall have a transmittal letter accompanying it indicating the date, design percentage, type of submittal, list of items submitted, transmittal number and point of contact with telephone number.

3.9.3.3. Provide partial sets of drawings, specifications, design analyses, etc., as designated in the Table in paragraph 3.9.1, to those reviewers who only need to review their applicable portions of the design, such as the various utilities. The details of which office receives what portion of the design documentation will be worked out after award.

### 3.10. AS-BUILT DOCUMENTS

Provide as-built drawings and specifications in accordance with Section 01 78 02.00 10, CLOSEOUT SUBMITTALS. Update LEED design phase documentation during construction as needed to reflect construction changes and advancing project completion status (example - Commissioning Plan updates during construction phase) and include updated LEED documentation in construction closeout submittal.

## **ATTACHMENT A STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS**

### **1.0 GENERAL INFORMATION**

Structural Interior Design includes all building related elements and components generally part of the building itself, such as wall finishes, ceilings finishes, floor coverings, marker/bulletin boards, blinds, signage and built in casework. Develop the SID in conjunction with the furniture footprint.

### **2.0 STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS**

#### **2.1. FORMAT AND SCHEDULE**

Prepare and submit for approval an interior and exterior building finishes scheme for an interim design submittal. The DOR shall meet with and discuss the finish schemes with the appropriate Government officials prior to preparation of the schemes to be presented. Present original sets of the schemes to reviewers at an interim design conference.

At the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers, the Contractor may proceed to final design with the interior finishes scheme presented.

The SID information and samples are to be submitted in 8 ½" x 11" format using three ring binders with pockets on the inside of the cover. When there are numerous pages with thick samples, use more than one binder. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½". Provide cover and spine inserts sheets identifying the document as "Structural Interior Design" package. Include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Design submittal requirements include, but are not limited to:

##### **2.1.1. Narrative of the Structural Interior Design Objectives**

The SID shall include a narrative that discusses the building related finishes. Include topics that relate to base standards, life safety, sustainable design issues, aesthetics, durability and maintainability, discuss the development and features as they relate to the occupants requirements and the building design.

##### **2.1.2. Interior Color Boards**

Identify and key each item on the color boards to the contract documents to provide a clear indication of how and where each item will be used. Arrange finish samples to the maximum extent possible by room type in order to illustrate room color coordination. Label all samples on the color boards with the manufacturer's name, patterns and colors name and number. Key or code samples to match key code system used on contract drawings.

Material and finish samples shall indicate true pattern, color and texture. Provide photographs or colored photocopies of materials or fabrics to show large overall patterns in conjunction with actual samples to show the actual colors. Finish samples must be large enough to show a complete pattern or design where practical.

Color boards shall include but not be limited to original color samples of the following:



All walls finishes and ceiling finishes, including corner guards, acrylic wainscoting and wall guards/chair rail finishes

All tile information, including tile grout color and tile patterns.

- All flooring finishes, including patterns.
- All door, door frame finishes and door hardware finishes
- All signage, wall base, toilet partitions, locker finishes and operable/folding partitions and trim
- All millwork materials and finishes (cabinets, counter tops, etc.)
- All window frame finishes and window treatments (sills, blinds, etc.)

Color board samples shall reflect all actual finish textures, patterns and colors required as specified. Patterned samples shall be of sufficient size to adequately show pattern and its repeat if a repeat occurs.

### 2.1.3. Exterior Color Boards

Prepare exterior finishes color boards in similar format as the interior finishes color boards, for presentation to the reviewers during an interim design conference. Provide original color samples of all exterior finishes including but not limited to the following:

- All Roof Finishes
- All Brick and Cast Stone Samples
- All Exterior Insulation and Finish Samples
- All Glass Color Samples
- All Exterior Metals Finishes
- All Window & Door Frame Finishes
- All Specialty Item Finishes, including trim

Identify each item on the exterior finishes color boards and key to the building elevations to provide a clear indication of how and where each item will be used.

## 2.2. STRUCTURAL INTERIOR DESIGN DOCUMENTS

### 2.2.1. General

Structural interior design related drawings must indicate the placement of extents of SID material, finishes and colors and must be sufficiently detailed to define all interior work. The following is a list of minimum requirements:

### 2.2.2. Finish Color Schedule

Provide finish color schedule(s) in the contract documents. Provide a finish code, material type, manufacturer, series, and color designations. Key the finish code to the color board samples and drawings.

### 2.2.3. Interior Finish Plans

Indicate wall and floor patterns and color placement, material transitions and extents of interior finishes.

### 2.2.4. Furniture Footprint Plans

Provide furniture footprint plans showing the outline of all freestanding and systems furniture for coordination of all other disciplines.

### 2.2.5. Interior Signage

Include interior signage plans or schedules showing location and quantities of all interior signage. Key each interior sign to a quantitative list indicating size, quantity of each type and signage text.

2.2.6. Interior Elevations, Sections and Details

Indicate material, color and finish placement.

## **ATTACHMENT B FURNITURE, FIXTURES & EQUIPMENT (FF&E) REQUIREMENTS**

### **1.0 FF&E REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS**

#### **1.1. FORMAT AND SCHEDULE**

Prepare and submit for approval a comprehensive FF&E scheme for an interim design submittal. The Contractor's interior designer, NOT A FURNITURE DEALER, shall develop the design. FF&E is the selection, layout, specification and documentation of furniture and includes but is not limited to workstations, seating, tables, storage and shelving, filing, trash receptacles, clocks, framed artwork, artificial plants, and other accessories. Contract documentation is required to facilitate pricing, procurement and installation. The FF&E package is based on the furniture footprint developed in the Structural Interior Design (SID) portion of the interior design. Develop the FF&E package concurrently with the building design to ensure that there is coordination between the electrical outlets, switches, J-boxes, communication outlets and connections, and lighting as appropriate. In addition, coordinate layout with other building features such as architectural elements, thermostats, location of TV's, GF/GI equipment (for example computers, printers, copiers, shredders, faxes), etc. Locate furniture in front of windows only if the top of the item falls below the window and unless otherwise noted, do not attach furniture including furniture systems to the building. If project has SIPRNET and/or NIPRNET, coordinate furniture layout with SIPRNET and NIPRNET separation requirements. Verify that access required by DOIM for SIPRNET box and conduit is provided. The DOR shall interview appropriate Government personnel to determine FF&E requirements for furniture and furnishings prior to preparation of the scheme to be presented. Determine FFE items and quantities by, but not limited to: (1) the number of personnel to occupy the building, (2) job functions and related furniture/office equipment to support the job function, (3) room functions, (4) rank and grade. Present original sets of the scheme to reviewers at an interim design conference upon completion of the interim architectural submittal or three months prior to the submittal of the final FF&E package (whichever comes first).

Design may proceed to final with the FF&E scheme presented at the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers.

Provide six copies of the electronic versions of all documents upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first), to ensure adequate time for furniture acquisition. Provide six compact disks with all drawings files needed to view the complete drawings unbound and in the latest version AutoCAD. Provide six additional compact disks of all text documents in Microsoft Word or Excel.

Submit four copies of the final and complete FF&E information and samples in 8 ½" x 11" format using three ring binders with pockets on the inside of the cover upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first). Use more than one binder when there are numerous pages with thick samples. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out for upholstery and finish boards. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½". Provide cover and spine inserts sheets identifying the document as "Furniture, Fixtures & Equipment" package and include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Design submittal requirements include, but are not limited to:

##### **1.1.1. Narrative of Interior Design Objectives**

Provide a narrative description of the furniture, to include functional, safety and ergonomic considerations, durability, sustainability, aesthetics, and compatibility with the building design.

### 1.1.2. Furniture Order Form

Prepare one Furnishings Order Form for each item specified in the design. This form identifies all information required to order each individual item. In addition to the project name and location, project number, and submittal phase, the order form must include:

- (a) Furniture item illustration and code
- (b) Furniture item name
- (c) Job name, location, and date
- (d) General Services Administration (GSA) FSC Group, part, and section
- (e) GSA Contract Number, Special Item Number (SIN), and contract expiration date
- (f) Manufacturer, Product name and Product model number or National Stock Number (NSN)
- (g) Finish name and number (code to finish samples)
- (h) Fabric name and number, minimum Wyzenbeek Abrasion Test double rubs (code to fabric samples)
- (i) Dimensions
- (j) Item location by room number and room name
- (k) Quantity per room
- (l) Total quantity
- (m) Special instructions for procurement ordering and/or installation (if applicable)
- (n) Written Product Description: include a non-proprietary paragraph listing the salient features of the item to include but not limited to:
  - (1) required features and characteristics
  - (2) ergonomic requirements
  - (3) functional requirements
  - (4) testing requirements
  - (5) furniture style
  - (6) construction materials
  - (7) minimum warranty

The following is an example for “m” features and characteristics, ergonomic requirements and functional requirements:

Chair Description:

- (1) Mid-Back Ergonomic Task Chair
- (2) Pneumatic Gaslift; Five Star Base
- (3) Mesh Back; Upholstered Seat
- (4) Height and Width Adjustable Task Arms:
  - a. Arm Height: 6”- 11” (+-1/2”)
  - b. Arm Width: 2”– 4” adjustment
- (5) Height Adjustable Lumbar Support

- (6) Adjustable Seat Height 16"-21" (+- 1")
- (7) Sliding Seat Depth Adjustment 15"-18" (+-1")
- (8) Standard Hard Casters (for carpeted areas)
- (9) Overall Measurements:
  - a. Overall width: 25" - 27"
  - b. Overall depth: 25"– 28"
- (10) Must have a minimum of the following adjustments (In addition to the above):
  - a. 360 Degree Swivel
  - b. Knee-Tilt with Tilt Tension
  - c. Back angle
  - d. Forward Tilt
  - e. Forward Tilt and Upright Tilt Lock

For projects with systems furniture, also provide a written description of the following minimum requirements:

- (1) Type furniture systems (panel, stacking panels, spine wall, desk based system, or a combination)
- (2) Minimum noise reduction coefficient (NRC)
- (3) Minimum sound transfer coefficient (STC)
- (4) Minimum flame spread and smoke development
- (5) UL testing for task lighting and electrical system
- (6) Panel widths and heights and their locations (this may be done on the drawings) Worksurface types and sizes (this may be done on the drawings)
- (7) Worksurface edge type
- (8) Varying panel/cover finish materials and locations (locations may be shown on the drawings)
- (9) Storage requirements
- (10) Keyboard requirements
- (11) Lock and keying requirements
- (12) Accessory components (examples: tack boards, marker boards, paper management)
- (13) Electrical and communication raceway requirement; type, capacity and location (base, beltline, below and/or above beltline)
- (14) Locations of communication cables (base, beltline, below and/or above beltline, top channel)
- (15) Types of electrical outlets
- (16) Types of communication jacks; provided and installed by others
- (17) Locations of electrical outlets and communication jacks (this may be done on the drawings)
- (18) Type of cable (examples: Cat. 5, Cat. 6, fiber optic; UTP or STP, etc.) system needs to support; provided and installed by others

#### 1.1.3. Manufacturer & Alternate Manufacturer List

Provide a table consisting of all the major furniture items in the order forms and two alternate manufacturers for each item. ALTERNATE MANUFACTURER ITEMS MUST BE SELECTED FROM GSA SCHEDULE AND MEET ALL THE SALIENT FEATURES OF THE ORIGINALLY SPECIFIED ITEM. Provide manufacturer name, address, telephone number, product series and product name for each item and the two alternate items. Major furniture items include, but are not limited to, casegoods, furniture systems, seating, and tables. Organize matrix by item code and item name.

#### 1.1.4. FF&E Procurement List

Provide a table that lists all FF&E furniture, mission unique equipment and building Contractor Furnished/Contractor Installed (CF/CI) items. Give each item a code and name and designate whether item will be procured as part of the FF&E furniture, mission unique equipment or the building construction contract. Use the item code to key all FF&E documents including location plans, color boards, data sheets, cost estimate, etc. Divide the FF&E package into different sections based on this listing, applies to order forms and cost estimates.

#### 1.1.5. Points of Contact (POCs)

Provide a comprehensive list of POCs needed to implement the FF&E package. This would include but not be limited to appropriate project team members, using activity contacts, interior design representatives, construction contractors and installers involved in the project. In addition to name, address, phone, fax and email, include each contact's job function. Divide the FF&E package into different sections based on this listing, applies to order forms and cost estimates.

#### 1.1.6. Color Boards

Provide color boards for all finishes and fabrics for all FF&E items. Finishes to be included but not limited to paint, laminate, wood finish, fabric, etc.

#### 1.1.7. Itemized Furniture Cost Estimate

Provide an itemized cost estimate of furnishings keyed to the plans and specifications of products included in the package. This cost estimate should be based on GSA price schedules. The cost estimate must include separate line items for general contingency, installation, electrical hook-up for systems furniture or other furniture requiring hardwiring by a licensed electrician, freight charges and any other related costs. Installation and freight quotes from vendors should be used in lieu of a percentage allowance when available. Include a written statement that the pricing is based on GSA schedules. An estimate developed by a furniture dealership may be provided as support information for the estimate, but must be separate from the contractor provided estimate.

### 1.2. INTERIOR DESIGN DOCUMENTS

#### 1.2.1. Overall Furniture and Area Plans

Provide floor Plans showing locations and quantities of all freestanding, and workstation furniture proposed for each floor of the building. Key each room to a large scale Furniture Placement Plan showing the furniture configuration, of all furniture. Provide enlarged area plans with a key plan identifying the area in which the building is located. Key all the items on the drawings by furniture item code. Do not provide manufacturer specific information such as product names and numbers on drawings, Drawings shall be non-proprietary. This is typical for FFE on all plans, including those mentioned below. Coordinate the overall furniture and area plans with the Life Safety Code Review to ensure adequate clearances are provided for egress. Provide a narrative of this coordination to accompany the Furniture and Area plans.

#### 1.2.2. Workstation Plans

Show each typical workstation configuration in plan view. In addition, provide either elevations or an isometric view. Drawings shall illustrate panels and all major components for each typical workstation configuration. Identify workstations using the same numbering system as shown on the project drawings. Key components to a legend on each sheet which identifies and describes the components along with dimensions. Provide the plan, elevations and isometric of each typical workstation together on the same drawing sheet.

#### 1.2.3. Panel Plans

Show panel locations and critical dimensions from finished face of walls, columns, panels including clearances and aisle widths. Key panel assemblies to a legend which shall include width, height, configuration of frames, panel fabric and finishes (if there are different selections existing within a project), powered or non-powered panel and wall mount locations.

#### 1.2.4. Desk Plans

Provide typical free standing desk configurations in plan view. In addition, provide either elevation or an isometric view and identify components to clearly represent each desk configuration.

#### 1.2.5. Reflected Ceiling Plans

Provide typical plans showing ceiling finishes and heights, lighting fixtures, heating ventilation and air conditioning supply and return, and sprinkler head placement for coordination of furniture.

#### 1.2.6. Electrical and Telecommunication Plans

Show power provisions including type and locations of feeder components, activated outlets and other electrical components. Show locations and quantities of outlets for workstations. Clearly identify different outlets, i.e. electrical, LAN and telecommunication receptacles indicating each type proposed. Show wiring configuration, (circuiting, switching, internal and external connections) and provide as applicable.

#### 1.2.7. Artwork Placement Plans

Provide an Artwork Placement Plan to show location of artwork, assign an artwork item code to each piece of artwork. As an alternative, artwork can be located on the Furniture Plans. Provide a schedule that identifies each piece by room name and number. Provide installation instructions; include mounting height.

#### 1.2.8. Window Drapery Plans

Provide Interior Window Drapery Plans. Key each drapery treatment to a schedule showing color, pattern, material, drapery size and type, draw direction, location and quantities.

#### 1.2.9. Portable Fire extinguishers:

Provide a list of all required portable fire extinguishers, with descriptions (location, size, type, etc.) and total number per type. See also attachment D, "SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW", paragraph 1.14.

### 1.3. FURNITURE SELECTION

1.3.1. Select furniture from the GSA Schedules. Specify furniture available open market when an item is not available on the GSA Schedules. Provide justification for items not available on the GSA Schedules.

1.3.2. To the greatest extent possible when specifying furniture work within a manufacturer's family of furniture for selections, example: Steelcase, Turnstone, Brayton International, Metro, and Vecta are all Steelcase companies. Each alternate should also be specified from a manufacturer's family of furniture, example: first set of alternates would be specified from Knoll's family of furniture and the second from Herman Miller family of furniture. It may be necessary to make some selections from other than a manufacturer's family of furniture if costs are not reasonable for particular items, some items are not available or appropriate for the facility or the items are not on GSA Schedule. If this occurs, consider specifying product from an open line that is accessible by numerous dealerships. Select office furniture including case goods, tables, storage, seating, etc. that is compatible in style, finish and color. Select furniture that complies with ANSI/BIFMA and from manufacturer's standard product line as shown in the most recent published price list and/or amendment and not custom product.

#### 1.4. CONSTRUCTION

1.4.1. Provide knee space at workstations and tables that is not obstructed by panels/legs that interfere with knee space of seated person and specify modesty panels at walls to be of a height or be hinged to allow access to building wall electrical outlets and communication jacks. Provide desks, storage and tables with leveling devices to compensate for uneven floors.

1.4.2. Unless otherwise noted, specify workstations and storage of steel construction. Provide high pressure laminate worksurface tops constructed to prevent warpage (thermally fused worksurfaces are not acceptable). Provide user friendly features such as radius edges. Do not use sharp edges and exposed connections and ensure the underside of desks, tables and worksurfaces are completely and smoothly finished. Provide abutting worksurfaces that mate closely and are of equal heights when used in side-by-side configurations in order to provide a continuous and level worksurface.

1.4.3. Drawers shall stay securely closed when in the closed position and protect wires from damage during drawer operation. Include a safety catch to prevent accidental removal when fully open

1.4.4. Unless otherwise noted, provide lockable desks and workstations, filing cabinets and storage. Key all locks within a one person office the same; key all one person offices within a building differently. If an office or open office area has more than one workstation, key all the workstations differently, but key all locks within an individual workstation the same. Use tempered glass glazing when glazing is required. Use light-emitting diode (LED)/solid state lighting where task lighting is required in furniture.

#### 1.5. FINISHES AND UPHOLSTERY

1.5.1. Specify neutral colors for casegoods, furniture systems, storage and tables. Specify desk worksurfaces and table tops that are not too light or too dark in color and have a pattern to help hide soiling. Accent colors are allowed in break and lounge areas. Keep placement of furniture systems panel fabric accent colors to a minimum. All finishes shall be cleanable with ordinary household cleaning solutions.

1.5.2. Use manufacturer's standard fabrics; including textile manufacturers fabrics that have been graded into the furniture manufacturers fabric grades and are available through their GSA Schedule. Customers Own Material (COM) can be used in headquarter buildings in command suites with executive furniture. Coordinate specific locations with Corps of Engineers Interior Designer.

1.5.3. Specify seating upholstery that meets Wyzenbeek Abrasion Test, 55,000 minimum rubs. Specify a soil retardant finish for woven fabrics if Crypton or vinyl upholstery is not provided for seating in dining areas. Use manufacturer's standard fabrics. This includes textile manufacturers fabrics that have been graded into the furniture manufacturers fabric grades and are available through their GSA Schedule. Specify upholstery and finish colors and patterns that help hide soiling. Specify finishes that can be cleaned with ordinary household cleaning solutions.



## 1.6. ACCESSORIES

1.6.1. Specify all accessories required for completely finished furniture installation. Provide filing cabinets and storage for office supplies. Provide tack surfaces at workstations with overhead storage. Provide tackable surfaces at workstations with overhead storage.

1.6.2. Not Used.

1.6.3. Workstations are to be equipped with stable keyboard trays that have height adjustability, tilting capability, including negative tilt, have a mouse pad at same height as the keyboard tray that can accommodate both left and right handed users, and retractable under worksurface.

## 1.7. MISSION UNIQUE EQUIPMENT

Funding for FF&E furniture items and mission unique equipment (MUE) items are from two different sources. Separate the designs and procurement documentation for FFE items and MUE. MUE includes, but is not limited to, items such as commercial appliances, fitness equipment, IT equipment and supporting carts. The User will purchase and install mission unique equipment items, unless otherwise noted. Identify locations of known MUE items such as commercial appliances, etc. for space planning purposes.

## 1.8. SUSTAINABILITY

1.8.1. For all designs provided regardless of facility type, make every effort to implement all aspects of sustainability to the greatest extent possible for all the selections made in the FF&E package. This includes but is not limited to the selection of products that consider: **Material Chemistry and Safety of Inputs** (What chemicals are used in the construction of the selections?); **Recyclability** (Do the selections contain recycled content?); **Disassembly** (Can the selections be disassembled at the end of their useful life to recycle their materials?).

1.8.2. Make selections to the greatest extent possible of products that possess current McDonough Braungart Design Chemistry ([MBDC](#)) certification or other "third-party" certified Cradle to Cradle program, Forest Stewardship Council (FSC) certification, GREENGAURD certification or similar "third-party" certified products consisting of low-emitting materials.

## 1.9. FURNITURE SYSTEMS

1.9.1. General.

Where appropriate, design furniture systems in open office areas. Coordinate style and color of furniture systems with other storage, seating, etc. in open office areas. Minimize the number of workstation typicals and the parts and pieces required for the design to assist in future reconfiguration and inventorying.

1.9.2. Connector Systems.

Specify a connector system that allows removal of a single panel or spine wall within a typical workstation configuration without requiring disassembly of the workstation or removal of adjacent panels. Specify connector system with tight connections and continuous visual seals. When Acoustical panels are used, provide connector system with continuous acoustical seals. Specify concealed clips, screws, and other construction elements, where possible.

1.9.3. Panels and Spine Walls

Specify panels and spine walls with hinged or removable covers that permit easy access to the raceway when required but are securely mounted and cannot be accidentally dislodged under normal conditions. Panels shall be capable of structurally supporting more than 1 fully loaded component per panel per side. Raceways are to be an integral part of the panel and must be able to support lay-in cabling and have a large capacity for electrical and IT. Do not thread cables through the frame.

#### 1.9.4. Electrical And Information/Technology (IT)

Design furniture with electrical systems that meets requirements of UL 1286 when powered panels are required and UL approved task lights that meet requirements of NFPA 70. Dependent on user requirements and Section 01 10 00, paragraph 3 requirements, it is recommended that workstation electrical and IT wiring entry come from the building walls to eliminate the use of power poles and access at the floor. Design electrical and IT systems that are easily accessed in the spine wall and panels without having to move return panels and components. Electrical and IT management will be easily accessible by removable wall covers which can be removed while workstation components are still attached. Specify connector system that has continuation of electrical and IT wiring within workstations and workstation to workstation.

#### 1.9.5. Pedestals

Specify pedestals that are interchangeable from left to right, and right to left, and retain pedestal locking system capability.

### 1.10. EXECUTIVE FURNITURE

1.10.1. Design for executive furniture in command areas, coordinate specific locations with Corps of Engineers Interior Designer. Use upgraded furniture, upholsteries and finishes in command suites. This includes but is not limited to wood casegoods, seating and tables. Select executive furniture casegoods from a single manufacturer and style line, to include workstations, credenzas, filing, and storage, etc.

1.10.2. Specify furniture with wood veneer finish with mitered solid wood edge of same wood type. Other executive office furniture such as seating, tables, executive conference room furniture, etc. shall be compatible in style, finish and color with executive furniture casegoods.

### 1.11. SEATING

#### 1.11.1. General

Specify appropriate chair casters and glides for the floor finish where the seating is located. All task seating shall support up to a minimum of 250 lbs.

#### 1.11.2. Desk and Guest Seating

Select ergonomic desk chairs with casters, waterfall front, swivel, tilt, variable back lock, adjustable back height or adjustable lumbar support, pneumatic seat height adjustment, and padded, contoured upholstered seat and back. Desk and guest chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Depending on scale of desk chair provide seat pan forward and back adjustment to increase or decrease depth of seat pan. All desk chairs shall have an adjustable seat height range of 4 1/2", range to include 16 1/2-20". Select guest chairs that are compatible in style, finish and color with the desk chairs.

#### 1.11.3. Conference Room Seating

At tables, select ergonomic conference seating with casters, non-upholstered arms, waterfall front, swivel, tilt, pneumatic seat height adjustment, and padded, contoured seat and back, unless otherwise noted.

Select arm height and/or design that allows seating to be moved up closely to the table top. Conference chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Perimeter conference chairs shall be compatible in style, finish and color with conference seating at the tables.

#### 1.11.4. Lounge, Waiting and Reception Area Seating

Select seating with arms and cushioned, upholstered seat and back. In heavy use areas, arms shall be easily cleaned such as non-upholstered arms or upholstered arms with wood arm caps unless otherwise noted.

#### 1.11.5. Break Room Seating

Select stackable seating that is easily cleaned. Seating shall be appropriate for table and counter heights as applicable with non-upholstered arms if arms are required. Chairs shall have metal legs and composite materials for seats.

#### 1.12. FILING AND STORAGE.

Select storage and shelving units that meet customer's functional load requirements for stored items. Specify counterweights for filing cabinets when required by the manufacturer for stability. File drawers shall allow only one drawer to be opened at a time. Provide heavy duty storage and shelving if information is not available.

#### 1.13. TRAINING TABLES.

training tables shall be reconfigurable, moveable and storable; lighter weight folding with dollies or casters as necessary. Plastic laminate self edges are unacceptable. Specify power and data requirements and dollies as required.

#### 1.14. FURNITURE WARRANTIES.

Specify manufacturer's performance guarantees or warranties that include parts, labor and transportation as follows:

Furniture System, unless otherwise noted – 10 year minimum  
Furniture System Task Lights – 2 year minimum, excluding bulbs  
Furniture System Fabric – 3 year minimum  
Wood Desks - 10 year minimum

Metal Desks – 12 year minimum  
Seating, unless otherwise noted - 10 year minimum  
Seating Mechanisms and Pneumatic Cylinders - 10 years  
Seating Fabric - 3 years minimum  
Wood Filing and Storage - 10 year minimum

Tables, unless otherwise noted - 10 year minimum  
Table Mechanisms – 5 year minimum  
Table Ganging Device - 1 year minimum  
Items not listed above - 1 year minimum

## **ATTACHMENT C TRACKING COMMENTS IN DRCHECKS**

### **1.0 General**

The Government and DB Contractor shall set up the project in Dr Checks. Throughout the design process, the parties shall enter, track, and back-check comments using the DrChecks system. Government and Contractor reviewers enter design review comments into DrChecks. Designers of Record shall annotate comments timely and specifically to indicate for the review conference exactly what action will be taken or why the action is not required. After the design review conference and prior to the next design submittal for the package, the DOR's will annotate those comments that require DOR action, design revision, etc. to show how and where it has been addressed in the design documents, This shall be part of the required design configuration management plan. Comments considered critical by the conference participants shall be flagged as such.

### **2.0 DrChecks Review Comments**

The Contractor and the Government shall monitor DrChecks to assure all comments are annotated and resolved prior to the next submittal. Print and include the DrChecks comments and responses and included in the design analysis for record in the next design submittal for that package.

2.1. Upon review of comments prior to the design review conference, the DOR(s) shall identify whether they concur, non-concur, mark it "for information only" or mark it "check and resolve". Indicate exactly what action will be taken or why the action is not required.

2.2. Conference participants (reviewers) will expect coordination between Design Analysis calculations and the submitted design. Reviewers will also focus on the design submittal's satisfaction of the contract requirements.

2.3. After the conference, the DOR(s) shall formally respond to each applicable comment in DrChecks a second time prior to the next submittal, clearly indicating what action was taken and what drawing/spec/design analysis changed. Designers of Record are encouraged to directly contact reviewers to discuss and agree to the formal comment responses rather than relying only on DrChecks and review meetings to discuss comments. With the next submittal, reviewers will back-check answers to the comments against the new submittal, in addition to reviewing additional design work.

2.4. Clearly annotate in DrChecks those comments that, in the DB Contractor's opinion, require effort outside the scope of the contract. Do not proceed with work outside the contract until a modification to the contract is properly executed, if one is necessary.

### **3.0 DrChecks Initial Account Set-Up**

To initialize an office's use of DrChecks, choose a contact person within the office to call the DrChecks Help Desk at 800-428-HELP, M-F, 8AM-5PM, Central time. This POC will be given an office password to distribute to others in the office. Individuals can then go to the hyperlink at <http://www.projnet.org> and register as a first time user. Upon registration, each user will be given a personal password to the DrChecks system.

3.1. Once the office and individuals are registered, the COE's project manager or lead reviewer will assign the individuals and/or offices to the specific project for review. At this point, persons assigned can make comments, annotate comments, and close comments, depending on their particular assignment.

### **4.0 DrChecks Reviewer Role**

The Contractor is the technical reviewer and the Government is the compliance reviewer of the DB's design documents. Each reviewer enters their own comments into the Dr Checks system. To enter comments:

- 4.1. Log into DrChecks.
- 4.2. Click on the appropriate project.
- 4.3. Click on the appropriate review conference. An Add comment screen will appear.
- 4.4. Select or fill out the appropriate sections (particularly comment discipline and type of document for sorting) of the comment form and enter the comment in the space provided.
- 4.5. Click the Add Comment button. The comment will be added to the database and a fresh screen will appear for the next comment you have.
- 4.6. Once comments are all entered, exit DrChecks by choosing "My Account" and then Logout.

#### **5.0 DrChecks Comment Evaluation (Step 1 of 2)**

The role of the DOR(s) is to evaluate and respond to the comments entered by the Government's and DB Contractor's reviewers. To respond to comments:

- 5.1. Log into DrChecks.
- 5.2. Click on the appropriate project.
- 5.3. Under "Evaluate" click on the number under "Pending".
- 5.4. Locate the comments that require your evaluation. (Note: If you know the comment number you can use the Quick Pick window on your home page in DrChecks; enter the number and click on go.)
- 5.5. Select the appropriate evaluation radio button (concur, non-concur, for information only, or check and resolve) and respond with a brief explanation in the Discussion field. An explanation other than to say "concur" is not necessary for "Concur", but may be useful for the Design Configuration Management purposes.
- 5.6. Click on the Add button. The evaluation will be added to the database and a fresh screen will appear with the next comment.
- 5.7. Once evaluations are all entered, exit DrChecks by choosing "My Account" and then Logout.

#### **6.0 DrChecks Comment Evaluation (Step 2 of 2)**

This is where the DOR(s) respond to each applicable comment in DrChecks after the design review conference, prior to the next submittal, clearly indicating what action was taken and what drawing/spec/design analysis changed. Respond to the previous comments, following the same steps as above, adding the narrative in the discussion field.

#### **7.0 DrChecks Back-Check**

At the following design conference, (where applicable) or at some other agreed time, Government and Contractor reviewers will back-check comment annotations against newly presented documents to verify that the designers' responses are acceptable and that all revisions have been completed. Reviewers

shall either enter additional back-check comments, if necessary, or close those where actions are complete.

7.1. Log into DrChecks.

7.2. Click on the appropriate project.

7.3. Under "My Backcheck" click on the number under "Pending".

7.4. If you agree with the designer's response select "Close Comment" and add a closing response if desired.

7.5. If you do not agree with the designer's response or the submittal does not reflect the response given, select "Issue Open", enter additional information.

7.6. Click on the Add button. The back-check will be added to the database and a fresh screen will appear with the next comment.

7.7. Once back-checks are all entered, exit DrChecks by choosing "My Account" and then Logout. The design is completed and final when there are no pending comments to be evaluated and there are no pending or open comments under back-check.

**ATTACHMENT D**  
**SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW**

Instructions: Use the information outlined in this document to provide the minimum requirement for development of Fire Protection and Life Safety Code submittals for all building projects. Additional and supplemental information may be used to further develop the code review. Insert N/A after criteria, which may be "not applicable".

**1.0 SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW**

- 1.1. Project Name (insert name and location)
- 1.2. Applicable Codes and Standards
  - 1.2.1. Unified Facilities Criteria (UFC): 3-600-01, Design: Fire Protection Engineering For Facilities
  - 1.2.2. International Building Code (IBC) for fire resistance requirements, allowable floor area, building height limitations and building separation distance requirements, except as modified by UFC 3-600-01.
  - 1.2.3. National Fire Protection Association (NFPA) 101 Life Safety Code (latest edition), for building egress and life safety and applicable criteria in UFC 3-600-01.
  - 1.2.4. ADA and ABA Accessibility Guidelines. For Buildings and Facilities See Section 01 10 00, Paragraph 3 for facility specific criteria.
- 1.3. Occupancy Classification  
IBC chapters 3 and 4
- 1.4. Construction Type  
IBC chapter 6
- 1.5. Area Limitations  
IBC chapter 5, table 503
- 1.6. Allowable Floor Areas  
IBC section 503, 505
- 1.7. Allowable area increases  
IBC section 506, 507
- 1.8. Maximum Height of Buildings  
IBC section 504
- 1.9. Fire-resistive substitution
- 1.10. Occupancy Separations  
IBC table 302.3.2
- 1.11. Fire Resistive Requirements
  - 1.11.1. Exterior Walls - [ ] hour rating, IBC table 601, 602

- 1.11.2. Interior Bearing walls - [ ] hour rating
- 1.11.3. Structural frame - [ ] hour rating
- 1.11.4. Permanent partitions - [ ] hour rating
- 1.11.5. Shaft enclosures - [ ] hour rating
- 1.11.6. Floors & Floor-Ceilings - [ ] hour rating
- 1.11.7. Roofs and Roof Ceilings - [ ] hour rating
- 1.12. Automatic Sprinklers and others used to determine the need for automatic Extinguishing Equipment, Extinguishing Systems, Foam Systems, Standpipe
  - 1.12.1. UFC 3-600-01, chapters 4 and 6 systems, wet chemical systems, etc. State which systems are required and to what criteria they will be designed.
  - 1.12.2. UFC 3-600-01, Appendix B Occupancy Classification. Note the classification for each room. This may be accomplished by classifying the entire building and noting exceptions for rooms that differ (E.g. The entire building is Light Hazard except boiler room and storage rooms which are [ ], etc.)
  - 1.12.3. UFC 3-600-01, Chapter 3 Sprinkler Design Density, Sprinkler Design Area, Water Demand for Hose Streams (supply pressure and source requirements).
  - 1.12.4. UFC 3-600-01, Chapter 4 Coverage per sprinkler head. Extended coverage sprinkler heads are not permitted.
  - 1.12.5. Available Water Supply. Provide the results of the water flow tests showing the available water supply static pressure and residual pressure at flow. Based on this data and the estimated flow and pressure required for the sprinkler system, determine the need for a fire pump.
  - 1.12.6. NFPA 13, Para. 8.16.4.6.1. Provide backflow preventer valves as required by the local municipality, authority, or water purveyor. Provide a test valve located downstream of the backflow preventer for flow testing the backflow preventer at full system demand flow. Route the discharge to an appropriate location outside the building.
- 1.13. Kitchen Cooking Exhaust Equipment

Describe when kitchen cooking exhaust equipment is provided for the project. Type of extinguishing systems for the equipment should be provided. per NFPA 96. Show all interlocks with manual release switches, fuel shutoff valves, electrical shunt trips, exhaust fans, and building alarms.
- 1.14. Portable Fire Extinguishers, fire classification and travel distance. per NFPA 10
- 1.15. Enclosure Protection and Penetration Requirements. - Opening Protectives and Through Penetrations
  - 1.15.1. IBC Section 712, 715 and Table 715.3. Mechanical rooms, exit stairways, storage rooms, janitor [ ] hour rating. IBC Table 302.1.1
  - 1.15.2. Fire Blocks, Draft Stops, Through Penetrations and Opening Protectives
- 1.16. Fire Dampers. Describe where fire dampers and smoke dampers are to be used (IBC Section 716 and NFPA 90A). State whether isolation smoke dampers are required at the air handler.



- 1.17. Detection Alarm and Communication. UFC 3-600-01, (Chapter 5); NFPA 101 para. 3.4 (chapters 12-42); NFPA 72
- 1.18. Mass Notification. Describe building/facility mass notification system (UFC 4-021-01) type and type of base-wide mass notification/communication system. State whether the visible notification appliances will be combined with the fire alarm system or kept separate. (Note: Navy has taken position to combine visible notification appliances with fire alarm).
- 1.19. Interior Finishes (classification). NFPA 101.10.2.3 and NFPA 101.7.1.4
- 1.20. Means of Egress
- 1.20.1. Separation of Means of Egress, NFPA 101 chapters 7 and 12-42; NFPA101.7.1.3
- 1.20.2. Occupant Load, NFPA101.7.3.1 and chapters 12-42.
- 1.20.3. Egress Capacity (stairs, corridors, ramps and doors) NFPA101.7.3.3
- 1.20.4. Number of Means of Egress, NFPA101.7.4 and chapters 12-42.
- 1.20.5. Dead end limits and Common Path of Travel, NFPA 101.7.5.1.6 and chapters 12-42.
- 1.20.6. Accessible Means of Egress (for accessible buildings), NFPA101.7.5.4
- 1.20.7. Measurement of Travel Distance to Exits, NFPA101.7.6 and chapters 12-42.
- 1.20.8. Discharge from Exits, NFPA101.7.7.2
- 1.20.9. Illumination of Means of Egress, NFPA101.7.8
- 1.20.10. Emergency Lighting, NFPA101.7.9
- 1.20.11. Marking of Means of Egress, NFPA101.7.10
- 1.21. Elevators, UFC 3-600-01, Chapter 6; IBC and ASME A17.1 - 2000,(Safety Code for Elevators and Escalators)
- 1.22. Accessibility Requirements, ADA and ABA Accessibility Guidelines for Buildings and Facilities
- 1.23. Certification of Fire Protection and Life Safety Code Requirements. (Note: Edit the Fire team membership if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features for this project in accordance with the attached completed form(s).
- 1.24. Designer of Record. Certification of Fire protection and Life Safety Code Requirements. (Note: Edit the Fire team members if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features of this project.

Fire Protection Engineer of Record:

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Signature and Stamp

Date

OR

Architect of Record:

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Signature and Stamp

Date

Mechanical Engineer of Record:

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Signature and Stamp

Date

Electrical Engineer of Record:

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Signature/Date

**ATTACHMENT E**  
**LEED SUBMITTALS**

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)	Provide for Credit Audit Only	REQUIRED DOCUMENTATION	DATE	REV
PAR		FEATURE	DUE AT			
<b>GENERAL</b>						
GENERAL - All calculations shall be in accordance with LEED 2009 Reference Guide.						
GENERAL: Obtain excel version of this spreadsheet at <a href="http://en.sas.usace.army.mil/enWeb/EngineeringCriteria">http://en.sas.usace.army.mil/enWeb/EngineeringCriteria</a> .						
GENERAL - For all credits, narrative/comments may be added to describe special circumstances or considerations regarding the project's credit approach.						
GENERAL - Include all required LEED drawings indicated below in contract drawings with applicable discipline drawings, labeled For Reference Only.						
NOTE: Each submittal indicated with "****" differs from LEED certified project submittals by either having a different due date or being an added submittal not required by GBCI.						
NOTE: Projects seeking LEED certification need only submit to GBCI whatever documentation is acceptable to GBCI (for example, licensed professional certifications). This checklist identifies what must be submitted to the Government for internal review purposes. Government review of LEED documentation in no way supercedes or modifies the requirements and rulings of GBCI for purposes of compliance with project requirement to obtain LEED certification.						
GENERAL - Audit documentation may include but is not limited to what is indicated in this table.						
			Closeout	List of all Final Design submittals revised after final design to reflect actual closeout conditions. Revised Final Design submittals. - OR - Statement confirming that no changes have been made since final design that effect final design submittal documents.		Proj Engr (PE)
<b>CATEGORY 1 - SUSTAINABLE SITES</b>						
SSPR1		Construction Activity Pollution Prevention (PREREQUISITE)	**Final Design	List of drawings and specifications that address the erosion control, particulate/dust control and sedimentation control measures to be implemented.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			**Final Design	Narrative that indicates which compliance path was used (NPDES or Local standards) and describes the measures to be implemented on the project. If a local standard was followed, provide specific information to demonstrate that the local standard is equal to or more stringent than the NPDES program.		CIV
SS1		Site Selection	Final Design	Statement confirming that project does not meet any of the prohibited criteria.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	LEED Site plan drawing that shows all proposed development, line depicting boundary of all bodies of water and/or wetlands within 100 feet of project boundary and a line depicting 5' elevation above 100 year flood line that falls within project boundary. Not required if neither condition applies.		CIV
SS2		Development Density & Community Connectivity	Final Design	Option 1: LEED Site vicinity plan showing project site and surrounding development. Show density boundary or note drawing scale.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Option 1: Table indicating, for project site and all surrounding sites within density radius (keyed to site vicinity plan), site area and building area. Project development density calculation. Density radius calculation. Development density calculation within density radius.		CIV
			Final Design	Option 2: LEED Site vicinity plan showing project site, the 1/2 mile community radius, pedestrian walkways and the locations of the residential development(s) and Basic Services surrounding the project site.		CIV
			Final Design	Option 2: List (including business name and type) of all Basic Services facilities within the 1/2 mile radius, keyed to site vicinity plan.		CIV
SS3		Brownfield Redevelopment	Final Design	Narrative describing contamination and the remediation activities included in project. Include statement indicating how site was determined to be a brownfield.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS4.1		Alternative Transportation: Public Transportation Access	Final Design	Statement indicating which option for compliance applies. State whether public transportation is existing or proposed and, if proposed, cite source of this information.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Option 1: LEED Site vicinity plan showing project site, mass transit stops and pedestrian path to them with path distance noted.		CIV
			Final Design	Option 2: LEED Site vicinity plan showing project site, bus stops and pedestrian path to them with path distance noted.		CIV
SS4.2		Alternative Transportation: Bicycle Storage & Changing Rooms	Final Design	FTE calculation. Bicycle storage spaces calculation. Shower/changing facilities calculation.		CIV
			Final Design	List of drawings that show the location(s) of bicycle storage areas. Statement indicating distance from building entrance.		CIV
			Final Design	List of drawings that show the location(s) of shower/changing facilities and, if located outside the building, statement indicating distance from building entrance.		ARC

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)	Provide for Credit Audit Only	REQUIRED DOCUMENTATION	DATE	REV
PAR		FEATURE	DUE AT			
SS4.3		Alternative Transportation: Low Emitting & Fuel Efficient Vehicles	Final Design	Statement indicating which option for compliance applies. FTE calculation. Statement indicating total parking capacity of site.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Option 1: Low-emission & fuel-efficient vehicle calculation.		CIV
			Final Design	Option 1: List of drawings and specification references that show location and number of preferred parking spaces for low-emission & fuel-efficient vehicles and signage.		CIV
			Final Design	Option 1: Statement indicating quantity, make, model and manufacturer of low-emission & fuel-efficient vehicles to be provided. Statement confirming vehicles are zero-emission or indicating ACEEE vehicle scores.		CIV
			Final Design	Option 2: Low-emission & fuel-efficient vehicle parking calculation.		CIV
			Final Design	Option 2: List of drawings and specification references that show location and number of preferred parking spaces and signage.		CIV
			Final Design	Option 3: Low-emission & fuel-efficient vehicle refueling station calculation.		CIV
			Final Design	Option 3: List of drawings and specifications indicating location and number of refueling stations, fuel type and fueling capacity for each station for an 8-hour period.		CIV
			Closeout	Option 3: Construction product submittals indicating what was provided and confirming compliance with respect to fuel type and fueling capacity for each station for an 8-hour period.		CIV
SS4.4		Alternative Transportation: Parking Capacity	Final Design	Statement indicating which option for compliance applies.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Option 1: Preferred parking calculation including number of spaces required, total provided, preferred spaces provided and percentage.		CIV
			Final Design	Option 2: FTE calculation. Preferred parking calculation including number of spaces provided, preferred spaces provided and percentage.		CIV
			Final Design	Options 1 and 2: List of drawings and specification references that show location and number of preferred parking spaces and signage.		CIV
			Final Design	Option 3: Narrative indicating number of spaces required and provided and describing infrastructure and support programs with description of project features to support them.		CIV
SS5.1		Site Development: Protect or Restore Habitat	**Final Design	Option 1: List of drawing and specification references that convey site disturbance limits.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			**Final Design	Option 2: LEED site plan drawing that delineates boundaries of each preserved and restored habitat area with area (sf) noted for each.		CIV
			**Final Design	Option 2: Percentage calculation of restored/preserved habitat to total site area. List of drawings and specification references that convey restoration planting requirements.		CIV
SS5.2		Site Development: Maximize Open Space	Final Design	Option 2: LEED site plan drawing delineating boundary of vegetated open space adjacent to building with areas of building footprint and designated open space noted.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS6.1		Stormwater Design: Quantity Control	Final Design	Statement indicating which option for compliance applies.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Option 1: Indicate pre-development and post-development runoff rate(cfs) and runoff quantity (cf) -OR - Narrative describing site conditions, measures and controls to be implemented to prevent excessive stream velocities and erosion.		CIV
			Final Design	Option 2: Indicate pre-development and post-development runoff rate(cfs) and runoff quantity (cf). Indicate percent reduction in each.		CIV
SS6.2		Stormwater Design: Quality Control	Final Design	For non-structural controls, list all BMPs used and, for each, describe the function of the BMP and indicate the percent annual rainfall treated. List all structural controls and, for each, describe the pollutant removal and indicate the percent annual rainfall treated.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS7.1		Heat Island Effect: Non-Roof	**Final Design	LEED site plan drawing indicating locations and quantities of each paving type, including areas of shaded pavement. Percentage calculation indicating percentage of reflective/shaded/open grid area.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)	Provide for Credit Audit Only	REQUIRED DOCUMENTATION	Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		FEATURE	DUE AT		DATE	REV
SS7.2		Heat Island Effect: Roof	Final Design	Option 1: Percentage calculation indicating percentage of SRI compliant roof area. List of drawings and specification references that convey SRI requirements and roof slopes.		ARC
			Final Design	Option 1: List of specified roof materials indicating, for each, type, manufacturer, product name and identification if known, SRI value and roof slope.		ARC
			**Closeout	Option 1: List of installed roof materials indicating, for each, manufacturer, product name and identification, SRI value and roof slope.		PE
			Closeout	X Option 1: Manufacturer published product data or certification confirming SRI		PE
			Final Design	Option 2: Percentage calculation indicating percentage of vegetated roof area.		ARC
			Final Design	Option 3: Combined reflective and green roof calculation.		ARC
			Final Design	Option 3: List of specified roof materials indicating, for each, type, manufacturer, product name and identification if known, SRI value and roof slope.		ARC
			**Closeout	Option 3: List of installed roof materials indicating, for each, manufacturer, product name and identification, SRI value and roof slope.		PE
			Closeout	X Option 3: Manufacturer published product data or certification confirming SRI		PE
SS8		Light Pollution Reduction	Final Design	Interior Lighting: List of drawings and specification references that convey interior lighting requirements (location and type of all installed interior lighting, location of non-opaque exterior envelope surfaces, allowing confirmation that maximum candela value from interior fixtures does not intersect non-opaque building envelope surfaces). - OR - List of drawings and specification references that show automatic lighting controls compliance with credit requirement.		ELEC
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		ELEC
			Final Design	Exterior Lighting: List of drawings and specification references that convey exterior lighting requirements (location and type of all site lighting and building façade/landscape lighting).		ELEC
			Final Design	Exterior Site Lighting Power Density (LPD): Tabulation for exterior site lighting indicating, for each location identification or description, units of measure, area or distance of the location, actual LPD using units consistent with ASHRAE 90.1, and the ASHRAE allowable LPD for that type of location. Percentage calculation of actual versus allowable LPD for all site lighting.		ELEC
			Final Design	Exterior Building Facade/Landscape Lighting Power Density (LPD): Tabulation for exterior building facade/landscape lighting indicating, for each location identification or description, units of measure, area or distance of the location, actual LPD using units consistent with ASHRAE 90.1, and the ASHRAE allowable LPD for that type of location. Percentage calculation of actual versus allowable LPD for all building facade/landscape lighting.		ELEC
			Final Design	Exterior Lighting IESNA Zone: Indicate which IESNA zone is applicable to the project.		ELEC
			Final Design	Exterior Lighting Site Lumen table indicating, for each fixture type, quantity installed, initial lamp lumens per luminaire, initial lamp lumens above 90 degrees from Nadir, total lamp lumens and total lamp lumens above 90 degrees. Percentage of site lamp lumens above 90 degrees from nadir to total lamp lumens.		ELEC
			Final Design	Exterior Lighting Narrative describing analysis used for addressing requirements for light trespass at site boundary and beyond.		ELEC
<b>CATEGORY 2 – WATER EFFICIENCY</b>						
WEPR1		Water Use Reduction: 20% Reduction	Final Design	Statement confirming which occupancy breakdown applies (default or special). For special occupancy breakdown, indicate source and explanation for ratio.		MEC
			Final Design	Occupancy calculation including male/female numbers for FTEs, visitors, students, customers, residential and other type occupants/users		MEC
			Final Design	Statement indicating percent of male restrooms with urinals. Statement indicating annual days of operation.		MEC

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)	Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		FEATURE	DUE AT	REQUIRED DOCUMENTATION	DATE	REV
			Final Design	Baseline flush fixture calculation spreadsheet indicating, for each fixture type, gender, flush rate, daily uses per person for each occupant type identified in occupancy calculation and annual baseline flush fixture water usage.		MEC
			Final Design	Design case flush fixture calculation spreadsheet indicating, for each fixture type, gender, fixture manufacturer, fixture model number, flush rate, percent of occupants using this fixture type, daily uses per person for each occupant type identified in occupancy calculation and annual design case flush fixture water usage.		MEC
			Closeout	X Manufacturer published product data or certification confirming fixture water usage.		PE
WE1.1		Water Efficient Landscaping: Reduce by 50%	Final Design	Statement indicating which option for compliance applies.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Calculation indicating, for baseline and design case, total water applied, total potable water applied, total non-potable water applied. Design case percent potable water reduction. If nonpotable water is used, indicate source of nonpotable water.		CIV
			Final Design	List of landscape plan drawings.		CIV
			Final Design	Narrative describing landscaping and irrigation design strategies, including water use calculation methodology used to determine savings and, if non-potable water is used, specific information about source and available quantity.		CIV
WE1.2		Water Efficient Landscaping: No Potable Water Use or No Irrigation	Same as WE1.1	Same as WE1.1		CIV
WE2		Innovative Wastewater Technologies	Final Design	Statement confirming which option for compliance applies.		MEC
			Final Design	Statement confirming which occupancy breakdown applies (default or special). For special occupancy breakdown, indicate source and explanation for ratio.		MEC
			Final Design	Occupancy calculation including male/female numbers for FTEs, visitors, students, customers, residential and other type occupants/users		MEC
			Final Design	Statement indicating percent of male restrooms with urinals. Statement indicating annual days of operation.		MEC
			Final Design	Baseline flush fixture calculation spreadsheet indicating, for each fixture type, gender, flush rate, daily uses per person for each occupant type identified in occupancy calculation and annual baseline flush fixture water usage.		MEC
			Final Design	Design case flush fixture calculation spreadsheet indicating, for each fixture type, gender, fixture manufacturer, fixture model number, flush rate, percent of occupants using this fixture type, daily uses per person for each occupant type identified in occupancy calculation and annual design case flush fixture water usage.		MEC
			Final Design	Option 1: If onsite non-potable water is used, identify source(s), indicate annual quantity from each source and indicate total annual quantity from all onsite non-potable water sources.		MEC
			Final Design	Option 1: Summary calculation indicating baseline annual water consumption, design case annual water consumption, non-potable annual water consumption and total percentage annual water savings.		MEC
			Final Design	Option 2: Statement confirming on-site treatment of all generated wastewater to tertiary standards and all treated wastewater is either infiltrated or used on-site.		MEC
			Final Design	Option 2: List of drawing and specification references that convey design of on-site wastewater treatment features.		CIV
			Final Design	Option 2: On-site water treatment quantity calculation indicating all on-site wastewater source(s), annual quantity treated, annual quantity infiltrated and annual quantity re-used on site from each source and totals for annual quantity treated, annual quantity infiltrated and annual quantity re-used on site from all sources.		CIV
			Final Design	Option 2: Wastewater summary calculation indicating design case annual flush fixture water usage, annual on-site water treatment and percentage sewage conveyance reduction.		MEC
			Final Design	Narrative describing project strategy for reduction of potable water use for sewage conveyance, including specific information on reclaimed water usage and treated wastewater usage.		MEC
WE3		Water Use Reduction: 30% - 40% Reduction	Same as WEPR1	Same as WEPR1		MEC
<b>CATEGORY 3 – ENERGY AND ATMOSPHERE</b>						

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PAR		FEATURE	DUE AT	REQUIRED DOCUMENTATION	DATE	REV
EAPR1		Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	**Final Design	**Owner's Project Requirements document		ALL
			**Final Design	**Basis of Design document for commissioned systems		MEC, ELEC
			**Final Design	**Commissioning Plan		MEC, ELEC
			Closeout	Statement confirming all commissioning requirements have been incorporated into construction documents.		PE
			Closeout	Commissioning Report		PE
EAPR2		Minimum Energy Performance (PREREQUISITE)	Final Design	Statement listing the mandatory provisions of ASHRAE 90.1 that project meets relative to compliance with this prerequisite and indicating which compliance path was used.		MEC ELEC ARC
			Final Design	Statement indicating which compliance path option applies.		MEC
			Final Design	Option 1: Statement confirming simulation software capabilities and confirming assumptions and methodology.		MEC
			Final Design	Option 1: General information including simulation program, principal heating source, percent new construction and renovation, weather file, climate zone and Energy Star Target Finder score.		MEC
			Final Design	Option 1: Space summary listing, for each building use, the conditioned area, unconditioned area and total area and include total area for each category		MEC
			Final Design	Option 1: List of all simulation output advisory message data and show difference between baseline and proposed design		MEC
			Final Design	Option 1: Comparison summary for energy model inputs including description of baseline and design case energy model inputs, showing both by element type		MEC
			Final Design	Option 1: Energy type summary listing, for each energy type, utility rate description, units of energy and units of demand		MEC
			Final Design	Option 1: Statement indicating whether project uses on-site renewable energy. If yes, list all sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost		MEC
			Final Design	Option 1: If analysis includes exceptional calculation methods, statement describing how exceptional calculation measure cost savings is determined		MEC
			Final Design	Option 1: If analysis includes exceptional calculation methods, for each exceptional calculation method indicate energy types and, for each energy type, annual energy savings, annual cost savings, and brief descriptive narrative		MEC
			Final Design	Option 1: Baseline performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand for all four orientations. For each orientation indicate total annual energy use for each orientation and total annual process energy use.		MEC
			Final Design	Option 1: Baseline energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design	Option 1: Proposed Design performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand, baseline annual and peak energy demand and percent savings. Indicate total annual energy use and total annual process energy use for both proposed design and baseline and percent savings.		MEC
			Final Design	Option 1: Proposed Design energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design	Option 1: Energy cost and consumption by energy type report indicating, for each energy type, proposed design and baseline annual use and annual cost, percent savings annual use and annual cost. Indicate for renewable energy annual energy generated and annual cost. Indicate exceptional calculations annual energy savings and annual cost savings. Indicate building total annual energy use, annual energy cost for proposed design and baseline and indicate percent savings annual energy use and annual energy cost.		MEC



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			Final Design	Option 1: Compliance summaries from energy simulation software. If software does not produce compliance summaries provide output summaries and example input summaries for baseline and proposed design supporting data in the tables. Output summaries must include simulated energy consumption by end use and total energy use and cost by energy type. Example input summaries should represent most common systems and must include occupancy, use pattern, assumed envelope component sizes and descriptive features and assumed mechanical equipment types and descriptive features		MEC
			Final Design	Option 1: Energy rate tariff from project energy providers (only if not using LEED Reference Guide default rates)		MEC
EAPR3		Fundamental Refrigerant Management (PREREQUISITE)	Final Design	Statement indicating which option for compliance applies.		MEC
			Final Design	Option 2: Narrative describing phase out plan, including specific information on phase out dates and refrigerant quantities.		MEC
EA1		Optimize Energy Performance	Final Design	Statement indicating which compliance path option applies.		MEC
			Final Design	Option 1: Statement confirming simulation software capabilities and confirming assumptions and methodology.		MEC
			Final Design	Option 1: General information including simulation program, principal heating source, percent new construction and renovation, weather file, climate zone and Energy Star Target Finder score.		MEC
			Final Design	Option 1: Space summary listing, for each building use, the conditioned area, unconditioned area and total area and include total area for each category		MEC
			Final Design	Option 1: List of all simulation output advisory message data and show difference between baseline and proposed design		MEC
			Final Design	Option 1: Comparison summary for energy model inputs including description of baseline and design case energy model inputs, showing both by element type		MEC
			Final Design	Option 1: Energy type summary listing, for each energy type, utility rate description, units of energy and units of demand		MEC
			Final Design	Option 1: Statement indicating whether project uses on-site renewable energy. If yes, list all sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost		MEC
			Final Design	Option 1: If analysis includes exceptional calculation methods, statement describing how exceptional calculation measure cost savings is determined		MEC
			Final Design	Option 1: If analysis includes exceptional calculation methods, for each exceptional calculation method indicate energy types and, for each energy type, annual energy savings, annual cost savings, and brief descriptive narrative		MEC
			Final Design	Option 1: Baseline performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand for all four orientations. For each orientation indicate total annual energy use for each orientation and total annual process energy use.		MEC
			Final Design	Option 1: Baseline energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design	Option 1: Proposed Design performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand, baseline annual and peak energy demand and percent savings. Indicate total annual energy use and total annual process energy use for both proposed design and baseline and percent savings.		MEC
			Final Design	Option 1: Proposed Design energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design	Option 1: Energy cost and consumption by energy type report indicating, for each energy type, proposed design and baseline annual use and annual cost, percent savings annual use and annual cost. Indicate for renewable energy annual energy generated and annual cost. Indicate exceptional calculations annual energy savings and annual cost savings. Indicate building total annual energy use, annual energy cost for proposed design and baseline and indicate percent savings annual energy use and annual energy cost.		MEC

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			Final Design	Option 1: Compliance summaries from energy simulation software. If software does not produce compliance summaries provide output summaries and example input summaries for baseline and proposed design supporting data in the tables. Output summaries must include simulated energy consumption by end use and total energy use and cost by energy type. Example input summaries should represent most common systems and must include occupancy, use pattern, assumed envelope component sizes and descriptive features and assumed mechanical equipment types and descriptive features		MEC
			Final Design	Option 1: Energy rate tariff from project energy providers (only if not using LEED Reference Guide default rates)		MEC
EA2.1		On-Site Renewable Energy	Final Design	Statement indicating which compliance path option applies.		ELEC
			Final Design	List all on-site renewable energy sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost. Indicate total annual energy use (all sources), total annual energy cost (all sources) and percent renewable energy cost.		ELEC MEC
			Final Design	Option 1: Indicate, for renewable energy, proposed design total annual energy generated and annual cost.		ELEC MEC
			Final Design	Option 2: Indicate CBECS building type and building gross area. Provide the following CBECS data: median annual electrical intensity, median annual non-electrical fuel intensity, average electric energy cost, average non-electric fuel cost, annual electric energy use and cost, annual non-electric fuel use and cost.		ELEC MEC
			Final Design	Option 2: Narrative describing renewable systems and explaining calculation method used to estimate annual energy generated, including factors influencing performance.		ELEC MEC
EA2.2		On-Site Renewable Energy	Same as EA2.1	Same as EA2.1		ELEC MEC
EA2.3		On-Site Renewable Energy	Same as EA2.1	Same as EA2.1		ELEC MEC
EA3		Enhanced Commissioning	**Final Design	**Owner's Project Requirements document (OPR)		ALL
			**Final Design	**Basis of Design document for commissioned systems (BOD)		ELEC MEC
			**Final Design	**Commissioning Plan		ELEC MEC
			Closeout	Statement confirming all commissioning requirements have been incorporated into construction documents.		PE
			Closeout	**Commissioning Report		PE
			**Final Design	Statement by CxA confirming Commissioning Design Review		
			Closeout	Statement by CxA confirming review of Contractor submittals for compliance with OPR and BOD		PE
			Closeout	**Systems Manual		PE
			Closeout	Statement by CxA confirming completion of O&M staff and occupant training		PE
			Closeout	**Scope of work for post-occupancy review of building operation, including plan for resolution of outstanding issues		PE
			**Predesign	Statement confirming CxA qualifications and contractual relationships relative to work on this project, demonstrating that CxA is an independent third party.		MEC
EA4		Enhanced Refrigerant Management	Final Design	Refrigerant impact calculation table with all building data and calculation values as shown in LEED 2009 Reference Guide Example Calculations		MEC
			Final Design	Narrative describing any special circumstances or explanatory remarks		
			Closeout	X Cut sheets highlighting refrigerant data for all HVAC components.		PE
EA5		Measurement & Verification	Closeout	Statement indicating which compliance path option applies.		PE
			Closeout	Measurement and Verification Plan including Corrective Action Plan		PE
			Closeout	**Scope of work for post-occupancy implementation of M&V plan including corrective action plan.		PE
EA6		Green Power	Closeout	Statement indicating which compliance path option applies.		PE
			Closeout	Option 1: Indicate proposed design total annual electric energy usage		PE
			Closeout	Option 2: Indicate actual total annual electric energy usage		PE
			Closeout	Option 3: Calculation indicating building type, total gross area, median electrical intensity and annual electric energy use		PE

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PAR		FEATURE	DUE AT			
			Closeout	Green power provider summary table indicating, for each purchase type, provider name, annual quantity green power purchased and contract term. Indicate total annual green power use and indicate percent green power		PE
			Closeout	Narrative describing how Green Power or Green Tags are purchased		PE
<b>CATEGORY 4 – MATERIALS AND RESOURCES</b>						
MRPR1		Storage & Collection of Recyclables (PREREQUISITE)	Final Design	Statement confirming that recycling area will accommodate recycling of plastic, metal, paper, cardboard and glass. Narrative indicating any other materials addressed and coordination with pickup.		ARC
MR1.1		Building Reuse: Maintain 55% of Existing Walls, Floors & Roof	**Final Design	If project includes a building addition, confirm that area of building addition does not exceed 2x the area of the existing building.		ARC
			**Final Design	Spreadsheet listing, for each building structural/envelope element, the existing area and reused area. Total percent reused.		ARC
MR1.2		Building Reuse: Maintain 75% of Existing Walls, Floors & Roof	Same as MR1.1	Same as MR1.1		ARC
MR1.3		Building Reuse: Maintain 95% of Existing Walls, Floors & Roof	Same as MR1.1	Same as MR1.1		ARC
MR1.4		Building Reuse: Maintain 50% of Interior Non-Structural Elements	**Final Design	If project includes a building addition, confirm that area of building addition does not exceed 2x the area of the existing building.		ARC
			**Final Design	Spreadsheet listing, for each building interior non-structural element, the existing area and reused area. Total percent reused.		ARC
MR2.1		Construction Waste Management: Divert 50% From Disposal	**Preconstruction	Waste Management Plan		PE
			**Construction Quarterly and Closeout	Spreadsheet calculations indicating material description, disposal/diversion location (or recycling hauler), weight, total waste generated, total waste diverted, diversion percentage		PE
			**Construction Quarterly and Closeout	Receipts/tickets for all items on spreadsheet		PE
MR2.2		Construction Waste Management: Divert 75% From Disposal	Same as MR2.1	Same as MR2.1		PE
MR3.1		Materials Reuse: 5%	Closeout	Statement indicating total materials value and whether default or actual.		PE
			Closeout	Spreadsheet calculations indicating, for each reused/salvaged material, material description, source or vendor, cost. Total reused/salvaged materials percentage.		PE
MR3.2		Materials Reuse: 10%	Same as MR3.1	Same as MR3.1		PE
MR4.1		Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Closeout	Statement indicating total materials value and whether default or actual.		PE
			Closeout	Spreadsheet calculations indicating, for each recycled content material, material name/description, manufacturer, cost, post-consumer recycled content percent, pre-consumer recycled content percent, source of recycled content data. Total post-consumer content materials cost, total pre-consumer content materials cost, total combined recycled content materials cost, recycled content materials percentage.		PE
			Final Design or NLT Preconstruction	**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	Manufacturer published product data or certification, confirming recycled content percentages in spreadsheet		PE
MR4.2		Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Same as MR4.1	Same as MR4.1		PE
MR5.1		Regional Materials: 10% Extracted, Processed & Manufactured Regionally	Closeout	Statement indicating total materials value and whether default or actual.		PE
			Closeout	Spreadsheet calculations indicating, for each regional material, material name/description, manufacturer, cost, percent compliant, harvest distance, manufacture distance, source of manufacture and harvest location data. Total regional materials cost, regional materials percentage.		PE
			Preconstruction	**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	Manufacturer published product data or certification confirming regional material percentages in spreadsheet		PE

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MR5.2		Regional Materials:20% Extracted, Processed & Manufactured Regionally	Same as MR5.1		Same as MR5.1	PE
MR6		Rapidly Renewable Materials	Closeout		Statement indicating total materials value and whether default or actual.	PE
			Closeout		Spreadsheet calculations indicating, for each rapidly renewable material, material name/description, manufacturer, cost, rapidly renewable content percent, rapidly renewable product value. Total rapidly renewable product value, rapidly renewable materials percentage.	PE
			Final Design		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.	ARC
			Closeout	X	Manufacturer published product data or certification confirming rapidly renewable material percentages in spreadsheet	PE
MR7		Certified Wood	Closeout		Statement indicating total materials value and whether default or actual.	PE
			Closeout		Spreadsheet calculations indicating, for each certified wood material, material name/description, vendor, cost, wood component percent, certified wood percent of wood component, FSC chain of custody certificate number. Total certified wood product value, certified wood materials percentage.	PE
			Final Design or NLT Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.	PE
			Closeout	X	Vendor invoices, FSC chain of custody certificates and manufacturer published product data or certification confirming all certified wood materials percentages in spreadsheet.	PE
<b>INDOOR ENVIRONMENTAL QUALITY</b>						
EQPR1		Minimum IAQ Performance (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies, stating applicable criteria/requirement, and confirming that project has been designed to meet the applicable requirements.	MEC
			Final Design		Narrative describing the project's ventilation design, including specifics about fresh air intake volumes and special considerations.	MEC
EQPR2		Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies, stating applicable criteria/requirement, and confirming that project has been designed to meet the applicable requirements.	ARC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements (signage, exhaust system, room separation details, etc).	ARC
EQ1		Outdoor Air Delivery Monitoring	Final Design		Statement indicating which option for compliance applies and confirming that project has been designed to meet the applicable requirements.	MEC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements.	MEC
			Final Design		Narrative describing the project's ventilation design and CO2 monitoring system, including specifics about monitors, operational parameters and setpoints.	MEC
			Closeout	X	Cut sheets for CO2 monitoring system.	PE
EQ2		Increased Ventilation	Final Design		Statement indicating which option for compliance applies and confirming that project has been designed to meet the applicable requirements.	MEC
			Final Design		Narrative describing the project's ventilation design, including specifics about zone fresh air intake volumes and demonstrating compliance.	MEC
			Final Design		Option 2: Narrative describing design method used for determining natural ventilation design, including calculation methodology/model results and demonstrating compliance.	MEC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements.	MEC
EQ3.1		Construction IAQ Management Plan: During Construction	**Preconstruction		Construction IAQ Management Plan	PE
			Closeout		Statement confirming whether air handling units were operated during construction	PE
			Closeout		Dated jobsite photos showing examples of IAQ management plan practices being implemented. Label photos to indicate which practice they demonstrate. Minimum one photo of each practice at each building.	PE

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			Closeout	Spreadsheet indicating, for each filter installed during construction, the manufacturer, model number, MERV rating, location installed, and if it was replaced immediately prior to occupancy.		PE
EQ3.2		Construction IAQ Management Plan: Before Occupancy	**Preconstruction	Construction IAQ Management Plan		PE
			Closeout	Statement indicating which option for compliance applies and confirming that required activities have occurred that meet the applicable requirements.		PE
			Closeout	Option 1a: Narrative describing the project's flushout process, including specifics about temperature, airflow and duration, special considerations (if any) and demonstrating compliance.		PE
			Closeout	Option 1b: Narrative describing the project's pre-occupancy and post-occupancy flushout processes, including specifics about temperature, airflow and duration, special considerations (if any) and demonstrating compliance.		PE
			Closeout	Option 2: Narrative describing the project's IAQ testing process, including specifics about contaminants tested for, locations, remaining work at time of test, retest parameters and special considerations (if any).		PE
			Closeout	Option 2: IAQ testing report demonstrating compliance.		PE
EQ4.1		Low Emitting Materials: Adhesives & Sealants	Closeout	Spreadsheet indicating, for each applicable indoor adhesive, sealant and sealant primer used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data.		PE
			Closeout	Spreadsheet indicating, for each applicable indoor aerosol adhesive, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data - OR - Statement confirming no indoor aerosol adhesives were used for the project.		PE
			Closeout	Manufacturer published product data or certification confirming material VOCs in spreadsheet		PE
EQ4.2		Low Emitting Materials: Paints & Coatings	Closeout	Spreadsheet indicating, for each applicable indoor paint and coating used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data.		PE
			Closeout	Spreadsheet indicating, for each applicable indoor anti-corrosive/anti-rust paint and coating used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data - OR - Statement confirming no indoor anti-corrosive/anti-rust paints were used for the project.		PE
			Closeout	Manufacturer published product data or certification confirming material VOCs in spreadsheet		PE
EQ4.3		Low Emitting Materials: Flooring Systems	Closeout	Spreadsheet indicating, for each indoor flooring system used, the manufacturer, product name/model number, if it meets LEED requirement (yes/no) and source of LEED compliance data.		PE
			Closeout	Spreadsheet indicating, for each indoor carpet cushion used, the manufacturer, product name/model number, if it meets LEED requirement (yes/no) and source of LEED compliance data - OR - Statement confirming no indoor carpet cushion was used for the project.		PE
			Closeout	Manufacturer published product data or certification confirming material compliance label in spreadsheet		PE
EQ4.4		Low Emitting Materials: Composite Wood & Agrifiber Products	Closeout	Spreadsheet indicating, for each indoor composite wood and agrifiber product used, the manufacturer, product name/model number, if it contains added urea formaldehyde (yes/no) and source of LEED compliance data.		PE
			Closeout	Manufacturer published product data or certification confirming material urea formaldehyde in spreadsheet		PE
EQ5		Indoor Chemical & Pollutant Source Control	Closeout	Spreadsheet indicating, for each permanent entryway system used, the manufacturer, product name/model number and description of system.		PE
			Final Design	List of drawing and specification references that convey locations and installation methods for entryway systems.		ARC
			Final Design	Spreadsheet indicating, for each chemical use area, the room number, room name, description of room separation features (walls, floor/ceilings, openings) and pressure differential from surrounding spaces with doors closed - OR - Statement confirming that project includes no chemical use areas and that no hazardous cleaning materials are needed for building maintenance.		ARC MEC
			Final Design	If project includes chemical use areas: List of drawing and specification references that convey locations of chemical use areas, room separation features and exhaust system.		ARC MEC

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			Final Design	If project includes places where water and chemical concentrate mixing occurs: List of drawing and specification references that convey provisions for containment of hazardous liquid wastes OR - Statement confirming that project includes no places where water and chemical concentrate mixing occurs.		ARC MEC
			Closeout	If project includes chemical use areas: Spreadsheet indicating, for AHUs/mechanical ventilation equipment serving occupied areas, the manufacturer, model number, MERV rating, location installed, and if it was replaced immediately prior to occupancy (yes/no) - OR - Statement confirming that project does not use mechanical equipment for ventilation of occupied areas.		PE
EQ6.1		Controllability of Systems: Lighting	Final Design	Calculation indicating total number of individual workstations, number of workstations with individual lighting controls and the percentage of workstations with individual lighting controls.		ELEC
			Final Design	For each shared multi-occupant space, provide a brief description of lighting controls.		ELEC
			Final Design	Narrative describing lighting control strategy, including type and location of individual controls and type and location of controls in shared multi-occupant spaces.		ELEC
EQ6.2		Controllability of Systems: Thermal Comfort	Final Design	Calculation indicating total number of individual workstations, number of workstations with individual thermal comfort controls and the percentage of workstations with individual thermal comfort controls.		MEC
			Final Design	For each shared multi-occupant space, provide a brief description of thermal comfort controls.		MEC
			Final Design	Narrative describing thermal comfort control strategy, including type and location of individual and shared multi-occupant controls.		MEC
EQ7.1		Thermal Comfort: Design	Final Design	Design criteria spreadsheet indicating, for spring, summer, fall and winter, maximum indoor space design temperature, minimum indoor space design temperature and maximum indoor space design humidity.		MEC
			Final Design	Narrative describing method used to establish thermal comfort control conditions and how systems design addresses the design criteria, including compliance with the referenced standard.		MEC
EQ7.2		Thermal Comfort: Verification	Final Design	Narrative describing the scope of work for the thermal comfort survey, including corrective action plan development		MEC
			Final Design	List of drawing and specification references that convey permanent monitoring system.		MEC
EQ8.1		Daylight & Views: Daylight 75% of Spaces	Final Design	Option 2: Table indicating all regularly occupied spaces with space area and space area with compliant daylight zone. Sum of regularly occupied areas and regularly occupied areas with compliant daylight zone. Percentage calculation of areas with compliant daylight zone to total regularly occupied areas.		ARC
			Final Design	Option 1: Simulation model method, software and output data		ELEC
			Final Design	Option 1: Table indicating all regularly occupied spaces with space area, space area with minimum 25 footcandles daylighting illumination, and method of providing glare control. Sum of regularly occupied areas and regularly occupied areas with 25 fc daylighting. Percentage calculation of areas with 25 fc daylighting to total regularly occupied areas.		ELEC
			Final Design	For all occupied spaces excluded from the calculation, provide narrative indicating reasons for excluding the space.		ARC
			Final Design	List of drawing and specification references that convey exterior glazed opening head and sill heights, glazing performance properties and glare control/sunlight redirection devices.		ARC
			Closeout	Manufacturer published product data or certification confirming glazing Tvis in spreadsheet		PE
EQ8.2		Daylight & Views: Views for 90% of Spaces	Final Design	Table indicating all regularly occupied spaces with space area and space area with access to views. Sum of regularly occupied areas and regularly occupied areas with access to views. Percentage calculation of areas with views to total regularly occupied areas.		ARC
			Final Design	For all occupied spaces excluded from the calculation, provide narrative indicating reasons for excluding the space.		ARC
			Final Design	LEED Floor plan drawings showing line of sight diagramming of views areas in each regularly occupied space. List of drawing/specification references that convey exterior glazed opening head and sill heights.		ARC
<b>INNOVATION &amp; DESIGN PROCESS</b>						

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IDc1.1		Innovation in Design	Final Design		Narrative describing intent, requirement for credit, project approach to the credit. List of drawings and specification references that convey implementation of credit. All other documentation that validates claimed credit.		
IDc1.2		Innovation in Design	Final Design				
IDc1.3		Innovation in Design	Final Design				
IDc1.4		Innovation in Design	Final Design				
IDc2		LEED Accredited Professional	Final Design		Narrative indicating name of LEED AP, company name of LEED AP, description of LEED AP's role and responsibilities in the project.		ARC

**ATTACHMENT F**

Version 05-31-2011

**BUILDING INFORMATION MODELING REQUIREMENTS****1.0 Section 1 - General**

1.1. Definitions. See Section 7 for definitions of terms used in this document.

1.2. Submittal Format

1.2.1. The Model shall be developed using Building Information Modeling ("BIM") supplemented with Computer Aided Design ("CAD") content as necessary to produce a complete set of Construction Documents. Printed design submittal drawings shall be ANSI D size, suitable for half-size scaled reproduction.

1.2.2. BIM submittals shall conform to the requirements of Sections 3 and 4 below.

1.2.3. For each Center of Standardization (CoS) facility type included in this Project, all Models and associated Facility Data shall be submitted in Bentley BIM XM or later. The submittals shall be fully operable, compatible, and editable within the native BIM tools.

**2.0 Section 2 – Design Requirements**

2.1. Use of BIM for Design. Contractor shall use BIM application(s) and software(s) to develop Project designs consistent with the following requirements.

2.1.1. Baseline Model. The Contractor will be provided a baseline multi-discipline BIM Project Model.

2.1.2. USACE BIM Workspace. The USACE Bentley BIM Workspace [Not Supplied - SubmittalReqCADDSystem : USACE\_WORKSPACE\_VERSION] must be used and can be downloaded from the CAD/BIM Technology Center website, currently <https://cadbim.usace.army.mil>.

2.1.3. Reference. Refer to ERDC TR-06-10, "U.S. Army Corps of Engineers Building Information Modeling Road Map" from the CAD/BIM Technology Center website for more information on the USACE BIM implementation goals.

2.1.4. Industry Foundation Class (IFC) Support. The Contractor's selected BIM application(s) and software(s) must be consistent with the current IFC property sets. Any deviations from or additions to the IFC property sets for any new spaces, systems, and equipment must be submitted for Government acceptance.

2.1.5. BIM Project Execution Plan.

2.1.5.1. Develop a BIM Project Execution Plan ("Plan" or "PxP") documenting the BIM uses, analysis technologies and workflows.

2.1.5.2. Contractors shall utilize the link for the USACE BIM PROJECT EXECUTION PLAN (USACE PxP) Template located in Attachment H to develop an acceptable Plan.

2.2. BIM Requirements.



2.2.1. Facility Data. Develop the Facility Data to include material definitions and attributes that are necessary for the Project facility design and construction as described in Section 4.0. Additional data in support of Section 6.0 Contractor Electives is encouraged to be added to the Model.

2.2.2. Model Content. The Model and Facility Data shall include, at a minimum, the requirements of Section 4 below.

2.2.3. Model Granularity. Individual elements may vary in level of detail within the Model, but at a minimum must include all features that would be included on a quarter inch ( $1/4" = 1'0"$ ) scaled drawing (e.g., at least  $1/16^{th}$ ,  $1/8^{th}$  and  $1/4^{th}$ ), or on appropriately scaled civil drawings.

2.3. Output. Submitted Drawings (e.g., plans, elevations, sections, schedules, details, etc.) shall be derived (commonly known as extractions, views or sheets) from the Model and Facility Data. Drawings derived from the Model shall remain connected to the Model for the life of the Project and documented in the PxP. Drawings not derived from the Model shall also be documented in the PxP.

2.3.1. Drawings derived from the Model shall be compliant with the A/E/C CAD Standard. Deliver electronic CAD files used for the creation of the Construction Documents per requirements in Section 01 33 16, the criteria of the USACE [Not Supplied - DistrictInfoGeneral : ISSUING\_DISTRICT] District, and as noted herein.

2.3.2. The CAD file format specified for drawings shall not dictate which application(s) are used for development and execution of the Model and Facility Data. Application(s) used shall be documented in the PxP.

2.4. Quality Control Parameters. Implement quality control ("QC") parameters for the Model, including:

2.4.1. Model Standards Checks. QC validation ensures that the Project Facility Data set has no undefined, incorrectly defined or duplicated elements. Identify and report non-compliant elements and submit a corrective action plan. Provide the Government with detailed justification and request Government acceptance for any non-compliant element that the Contractor proposes to be allowed to remain in the Model.

2.4.2. CAD Standards Checks. QC checking ensures that the fonts, dimensions, line styles, levels and other construction document formatting issues are followed per requirements in Section 01 33 16. Identify and report non-compliant content and submit a corrective action plan.

2.4.3. Other Parameters. Develop such other QC parameters as Contractor deems appropriate for the Project and provide to the Government for acceptance.

2.5. Design and Construction Reviews. Perform design and construction reviews at each submittal stage under Section 3 to test the Model, including:

2.5.1. Visual Checks. Checking to ensure the design intent has been followed and that there are no unintended elements in the Model.

2.5.2. Interference Management Checks. Locate conflicting spatial data in the Model where two elements are occupying the same space. Log hard interferences (e.g., mechanical vs. structural, or mechanical vs. mechanical, overlaps in the same location) and soft interferences, (e.g., conflicts regarding equipment clearance, service access, fireproofing, insulation, code space requirements) in a written report and resolve.

2.5.3. IFC Coordination View. Provide an IFC Coordination View in IFC Express format for all deliverables. Provide exported property set data for all IFC supported named building elements.

2.5.4. Other Parameters. Develop other design and construction review parameters as the Contractor deems appropriate for the Project and provide to the Government for acceptance.

### **3.0 Section 3 – Submittal Requirements**

#### **3.1. General Submittal Requirements.**

3.1.1. Provide submittals in compliance with the PxP deliverables at stages as described below.

3.1.2. For each Interim Design Submittal as set forth in Paragraphs 3.3 through 3.6, provide a Contractor-certified written report confirming that consistency checks as identified in Paragraphs 2.4 and 2.5 above have been completed. This report shall be discussed as part of the review process and shall address cross-discipline interferences, if any.

3.1.3. At each Interim Design Submittal as set forth in Paragraphs 3.3 through 3.6, provide the Government with:

3.1.3.1. The Model, Facility Data, Workspace and CAD Data files in the native BIM/CAD format.

3.1.3.2. A copy of the Model in an interactive review format such as Bentley Navigator, Autodesk Navisworks, Adobe 3D PDF 7.0 (or later), Google Earth KMZ or other format per PxP requirements. The format for reviews can change between submittals.

3.1.3.3. A list of all submitted electronic files including a description, directory, and file name for each file submitted. For all CAD printed sheets, include a list of the sheet titles and sheet numbers. Identify which files have been produced from the Model and Facility Data.

3.1.4. The Government shall confirm acceptability of all submittals identified in Section 3 in coordination with the USACE Geographic District BIM Manager.

#### **3.2. Initial Design Conference Submittal.**

3.2.1. Submit a digital copy of the PxP where, in addition to Paragraph 3.1.4, the USACE Geographic District BIM Manager will coordinate with the USACE CoS BIM Manager to confirm acceptability of the Plan or advise as to additional processes or activities necessary to be incorporated into the PxP.

3.2.2. Within thirty (30) days after the acceptance of the PxP, conduct a demonstration to review the Plan for clarification, and to verify the functionality of planned Model technology workflow and processes. If modifications are required, the Contractor shall complete the modifications and resubmit the PxP performing a subsequent demonstration for Government acceptance. There will be no payment for design or construction until the PxP is completed and accepted by the Government. The Government may also withhold payment if there is design and construction for unacceptable performance in executing the accepted PxP.

#### **3.3. Interim Design Submittals.**

3.3.1. BIM and CAD Data. Submit the Model with Facility Data per the requirements identified in Paragraphs 2.2 and 2.3 as applicable to the Interim Design package(s).

#### **3.4. Final Design Submissions and Design Complete Submittals.**

3.4.1. BIM and CAD Data. Submit the Model with Facility Data per the requirements identified in Paragraphs 2.2 and 2.3. Acceptance according to Paragraph 3.1.4 is required before commencement of construction, as described in Paragraph 3.7.6 of Section 01 33 16.

3.5. Construction Submittals – Over-The-Shoulder Progress Reviews. Periodic quality control meetings or construction progress review meetings shall include quality control reviews on the implementation and use of the Model, including interference management and design change tracking information.

3.6. Final As-Built BIM and CAD Data Submittal. Submit the final Model, Facility Data, and CAD files reflecting as-built construction conditions for Government acceptance, as specified in Section 01 78 02.00 10, PROJECT CLOSEOUT.

#### **4.0 Section 4 – BIM Model Minimum Requirements and Output**

4.1. General Provisions. The Model shall be developed to include the systems described below as they would be built, the processes of installing them, and to reflect final as-built construction conditions. The deliverable Model at the Interim Design Stage and at the Final Design Stage (“released for construction”) shall be developed to include as many of the systems described below as are necessary and appropriate at that design stage.

4.2. Architectural/Interior Design. The Architectural systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4”=1’0”) scaled drawing. Additional minimum Model requirements include:

4.2.1. Spaces. The Model shall include spaces defining actual net square footage and net volume, and holding data to develop the room finish schedule including room names and numbers. Include program information to verify design space against programmed space, using this information to validate area quantities.

4.2.2. Walls and Curtain Walls. Each wall shall be depicted to the exact height, length, width and ratings (thermal, acoustic, fire) to properly reflect wall types. The Model shall include all walls, both interior and exterior, and the necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.

4.2.3. Doors, Windows and Louvers. Doors, windows and louvers shall be depicted to represent their actual size, type and location. Doors and windows shall be modeled with the necessary intelligence to produce accurate window and door schedules.

4.2.4. Roof. The Model shall include the roof configuration, drainage system, penetrations, specialties, and the necessary intelligence to produce accurate plans, building sections and generic wall sections where roof design elements are depicted.

4.2.5. Floors. The floor slab(s) shall be developed in the Structural Model and then referenced by the Architectural Model.

4.2.6. Ceilings. All heights and other dimensions of ceilings, including soffits, ceiling materials, or other special conditions shall be depicted in the Model with the necessary intelligence to produce accurate plans, building sections and wall sections where ceiling design elements are depicted.

4.2.7. Vertical Circulation. All continuous vertical components (i.e., non-structural shafts, architectural stairs, handrails and guardrails) shall be accurately depicted and shall include the necessary intelligence to produce accurate plans, elevations and sections in which such design elements are referenced.

4.2.8. Architectural Specialties. All architectural specialties (i.e., toilet room accessories, toilet partitions, grab bars, lockers, and display cases) and millwork (i.e., cabinetry and counters) shall be accurately depicted with the necessary intelligence to produce accurate plans, elevations, sections and schedules in which such design elements are referenced.

4.2.9. Signage. The Model shall include all signage and the necessary intelligence to produce accurate plans and schedules.

4.2.10. Schedules. Provide door, window, hardware sets using BHMA designations, flooring, wall finish, and signage schedules from the Model, indicating the type, materials and finishes used in the design.

4.3. Furniture. The furniture Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing, and have necessary intelligence to produce accurate plans. Representation of furniture elements is to be 2D. Contractor may provide a minimal number of 3D representations as examples. Examples of furniture include, but are not limited to, desks, furniture systems, seating, tables, and office storage.

4.3.1. Furniture Coordination. Furniture that makes use of electrical, data or other features shall include the necessary intelligence to produce coordinated documents and data.

4.4. Equipment. The Model may vary in level of detail for individual elements. Equipment shall be depicted to meet layout requirements with the necessary intelligence to produce accurate plans and schedules, indicating the configuration, materials, finishes, mechanical, and electrical requirements.. Examples of equipment include but are not limited to copiers, printers, refrigerators, ice machines and microwaves.

4.4.1. Schedules. Provide furniture and equipment schedules from the model indicating the materials, finishes, mechanical, and electrical requirements.

4.5. Structural. The Structural systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Additional minimum Model requirements include:

4.5.1. Foundations. All necessary foundation and/or footing elements, with necessary intelligence to produce accurate plans and elevations.

4.5.2. Floor Slabs. Structural floor slabs shall be depicted with all necessary recesses, curbs, pads, closure pours, and major penetrations accurately depicted.

4.5.3. Structural Steel. All steel columns, primary and secondary framing members, and steel bracing for the roof and floor systems (including decks), including all necessary intelligence to produce accurate structural steel framing plans, related building/wall sections, and schedules.

4.5.4. Cast-in-Place Concrete. All walls, columns, beams, including necessary intelligence to produce accurate plans and building/wall sections, depicting cast-in-place concrete elements.

4.5.5. Expansion/Contraction Joints. Joints shall be accurately depicted.

4.5.6. Stairs. All framing members for stair systems, including necessary intelligence to produce accurate plans and building/wall sections depicting stair design elements.

4.5.7. Shafts and Pits. All shafts and pits, including necessary intelligence to produce accurate plans and building/wall sections depicting these design elements.

4.5.8. Openings and Penetrations. All major openings and penetrations that would be included on a quarter inch (1/4"=1'0") scaled drawing.

4.6. Mechanical. The Mechanical systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0")

scaled drawing. Small diameter (less than 1-1/2" NPS) field-routed piping is not required to be depicted in the Model. Additional minimum Model requirements include:

4.6.1. HVAC. All necessary heating, ventilating, air-conditioning and specialty equipment, including air distribution for supply, return, ventilation and exhaust ducts, control systems, registers, diffusers, grills, and hydronic baseboards with necessary intelligence to produce accurate plans, elevations, building/wall sections and schedules.

4.6.1.1. Mechanical Piping. All necessary piping and fixture layouts, and related equipment, including necessary intelligence to produce accurate plans, elevations, building/wall sections, and schedules.

4.6.2. Plumbing. All necessary plumbing piping and fixture layouts, floor and area drains, and related equipment, including necessary intelligence to produce accurate plans, elevations, building/wall sections, riser diagrams, and schedules.

4.6.3. Equipment Clearances. All Mechanical equipment clearances shall be modeled for use in interference management and maintenance access requirements.

4.6.4. Elevator Equipment. All necessary equipment and control systems, including necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.

4.7. Electrical/Telecommunications. The Electrical and Telecommunications systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Small diameter (less than 1-1/2"Ø) field-routed conduit is not required to be depicted in the Model. Additional minimum Model requirements include:

4.7.1. Interior Electrical Power and Lighting. All necessary interior electrical components (i.e., lighting, receptacles, special and general purpose power receptacles, lighting fixtures, panelboards, cable trays and control systems), including necessary intelligence to produce accurate plans, details and schedules. Lighting and power built into furniture/equipment shall be modeled.

4.7.2. Special Electrical. All necessary special electrical components (i.e., security, mass notification, public address, nurse call and other special electrical occupancy sensors, and control systems), including necessary intelligence to produce accurate plans, details and schedules.

4.7.3. Grounding. All necessary grounding components (i.e., lightning protection systems, static grounding systems, communications grounding systems, and bonding), including necessary intelligence to produce accurate plans, details and schedules.

4.7.4. Telecommunications. All existing and new telecommunications service controls and connections, both above ground and underground, with necessary intelligence to produce accurate plans, details and schedules. Cable tray routing shall be modeled without detail of cable contents.

4.7.5. Exterior Building Lighting. All necessary exterior lighting including all lighting fixtures, relevant existing and proposed support utility lines and equipment with necessary intelligence to produce accurate plans, details and schedules.

4.7.6. Equipment Clearances. All Electrical equipment clearances shall be modeled for use in interference management and maintenance access requirements.

4.8. Fire Protection. The fire protection system Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Additional minimum Model requirements include:

4.8.1. Fire Protection System. All relevant fire protection components (i.e., branch piping, sprinkler heads, fittings, drains, pumps, tanks, sensors, control panels) with necessary intelligence to produce accurate plans, elevations, building/wall sections, riser diagrams, and schedules. All fire protection piping shall be modeled.

4.8.2. Fire Alarms. Fire alarm/mass notification devices and detection system shall be indicated with necessary intelligence to produce accurate plans depicting them.

4.9. Civil. The Civil Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a one inch (1"=100') scaled drawing. Additional minimum Model requirements include:

4.9.1. Terrain (DTM). All relevant site conditions and proposed grading, including necessary intelligence to produce accurate Project site topographical plans and cross sections.

4.9.2. Drainage. All existing and new drainage piping, including upgrades thereto, including necessary intelligence to produce accurate plans and profiles for the Project site.

4.9.3. Storm Water and Sanitary Sewers. All existing and new sewer structures and piping, including upgrades thereto, with necessary connections to mains or other distribution points as appropriate, including necessary intelligence to produce accurate plans and profiles .

4.9.4. Utilities. All necessary new utilities connections from the Project building(s) to the existing or newly-created utilities, and all existing above ground and underground utility conduits, including necessary intelligence to produce accurate plans and site-sections.

4.9.5. Roads and Parking. All necessary roadways, parking lots, and parking structures, including necessary intelligence to produce accurate plans, profiles and cross-sections.

## **5.0 Section 5 - Ownership and Rights in Data**

5.1. Ownership. The Government has ownership of and rights at the date of Closeout Submittal to all CAD files, BIM Model, and Facility Data developed for the Project in accordance with FAR Part 27, clauses incorporated in Section 00 72 00, Contract Clauses and Special Contract Requirement 1.14 GOVERNMENT RE-USE OF DESIGN (Section 00 73 00). The Government may make use of this data following any deliverable.

## **6.0 Section 6 – Contractor Electives**

6.1. Applicable Criteria. If the Contractor elected to include one or more of the following features as an elective in its accepted contract proposal for additional credit, as described in the proposal submission requirements and evaluation criteria, the requirements of paragraphs 6.2 through 6.5 are as applicable for those elective feature(s) that will be included in the project.

6.2. COBIE Compliance. The Model and Facility Data for the Project shall fulfill Construction Operations Building Information Exchange (COBIE) requirements on the Whole Building Design Guide website ([www.wbdg.org](http://www.wbdg.org)) , including all requirements for the indexing and submission of Portable Document Format (PDF) and other appropriate records that would otherwise be printed and submitted in compliance with Project operations and maintenance handover requirements.

6.3. Project Scheduling using the Model. In the PxP and during the Initial Design Conference Submittal Demonstration, provide an overview of the use of BIM in the development and support of the Project construction schedule.

6.3.1. Submittal Requirements. During the Stages identified in Paragraphs 3.3 through 3.6, the Contractor shall deliver the construction schedule derived from the Model.

6.3.1.1. Construction Submittals – Over-The-Shoulder Progress Reviews. Periodic quality control meetings or construction progress review meetings shall include quality control reviews on the implementation and use of the Model for Project scheduling.

6.4. Cost Estimating. In the PxP and during the Initial Design Conference Submittal Demonstration, provide an overview of the use of BIM in the development and support of cost estimating, or other costing applications such as comparative cost analysis for proposed changes and estimate validation.

6.4.1. Submittal Requirements. During the Stages identified in Paragraphs 3.3 through 3.6, the Contractor shall deliver cost estimating information derived from the Model.

6.4.2. Project Completion. At Project completion, the Contractor shall provide an Micro Computer Aided Cost Estimating System Generation II ("MII") Cost Estimate that follows the USACE Cost Engineering Military Work Breakdown System ("WBS"), a modified Uniformat, to at least the sub-systems level and uses quantity information supplied directly from Model output to the maximum extent possible, though other "gap" quantity information will be included by the contractor as necessary for a complete and accurate Cost Estimate. (See Paragraph 6.4.2.2).

6.4.2.1. Sub system level extracted quantities from the Model for use within the Estimate shall be provided according to how detailed line items or tasks should be installed/built so that accurate costs can be developed and/or reflected. When developing a Model, the contractor shall be cognizant of construction sequencing at the beginning stages of Model development, such as recognizing tasks performed on the first floor versus the same task on higher floors that will be more labor intensive and, therefore, need to have a separate quantity and be priced differently. Tasks and their extracted quantities from the Model shall be broken down by their location (proximity in the structure) as well as the complexity of installation.

6.4.2.2. At all design Stages it shall be acknowledged that BIM output will not generate all quantities that are necessary in order to develop a complete and accurate cost estimate of the Project based on the design alone. (An example of this would be plumbing that is less than 1.5" diameter and, therefore, not expected to be modeled due to permitted level of design granularity; this information is commonly referred to as "The Gap". Quantities addressing "The Gap" and their associated costs shall be included in the final Project actual Cost Estimates as well even though not derived directly from the Model data).

6.5. Other Analyses and Reports. Structural, energy and efficiency, EPACT 2005 & EISA 2007, lighting design, daylighting, electrical power, psychrometric processing, shading, programming, LEED, fire protection, code compliance, Life Cycle Cost, acoustic, plumbing and other analyses that may be generated from the Model or reports summarizing the data compiled from these analyses shall be submitted in the form established by contractor in its accepted PxP.

## **7.0 Definitions**

7.1. The following definitions apply specifically in the context of this attachment only.

7.2. "Model": An electronic, three-dimensional representation of facility elements with associated intelligent attribute data ("Facility Data").

7.3. "Facility Data": The non-graphical information attached to objects in the Model that defines various characteristics of the object. Facility Data can include properties such as parametric values that drive physical sizes, material definitions and characteristics (e.g. wood, metal), manufacturer data, industry standards (e.g. AISC steel properties), and project identification numbers. Facility Data can also

define supplementary physical entities that are not shown graphically in the Model, such as insulation around a duct, or hardware on a door.

7.4. “Workspace”: A collection of content libraries and supporting files that define and embody a BIM standard. A workspace includes BIM libraries such as wall types, standard steel shapes, furniture, HVAC fittings, and sprinkler heads. It also contains sheet libraries such as print/plot configurations, font and text style libraries, and sheet borders and title blocks. The USACE has developed Workspaces specific to USACE BIM standards; these workspaces are dependent on specific versions of the BIM applications they serve. All USACE BIM Workspaces can be downloaded from the CAD/BIM Technology Center (<https://cadbim.usace.army.mil>). In some cases, there is a specific Workspace for a given CoS Facility Standard Design.

7.5. “IFC”: Industry Foundation Class, a standard and file format used for the exchange of BIM data; see [www.iai-tech.org](http://www.iai-tech.org). Note: In the context of this attachment, IFC does not mean “Issued For Construction.”



**ATTACHMENT G****DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT**

Organize electronic design submittal files in a subdirectory/file structure in accordance with the following table.

The Contractor may suggest a slightly different structure, subject to the discretion of the government.

**Design Submittal Directory and Subdirectory File Arrangement.**

Directory	Sub-Directory	Sub-Directory or Files	Files
Submittal/Package Name	Narratives	PDF file or files with updated design narrative for each applicable design discipline	
	Drawings	PDF (subdirectory)	Single PDF file with all applicable drawing sheets - bookmarked by sheet number and name
		BIM (subdirectory) See Attachment F.	BIM project folder (with files) per the USACE Workspace. Include an Excel drawing index file with each drawing sheet listed by sheet #, name and corresponding dgn file name (Final Design & Design Complete only)
	Design Analysis & Calculations	Individual PDF files containing design analysis and calculations for each discipline applicable to the submittal	
		PDF file with Fire Protection and Life Safety Code Review checklist	
	LEED	PDF file with updated Leed Check List	
		PDF file or files with LEED Templates for each point with applicable documentation included in each file.	
		LEED SUBMITTALS	
	Energy Analysis	PDF with baseline energy consumption analysis	
		PDF with actual building energy consumption analysis	
	Specifications	Single PDF file with table of contents and all applicable specifications sections.	
		Submittal Register (Final Design & Design Complete submittal only)	
	Design Quality Control	PDF file or files with DQC checklist(s) and/or statements	
	Building Rendering(s)	PDF file of rendering for each building type included in contract (Final Design & Design Complete).	

**ATTACHMENT H**  
**USACE BIM Project Execution Plan (PxP) Template Version 1.0**

This template is a tool that is provided to assist in the development of a USACE BIM Project Execution Plan as required per contract. The template provides a standard format for organizations to establish their general means and methods for meeting the scope and deliverable requirements in Attachment F. It was adapted from the buildingSMART alliance™ (bSa) Project "BIM Project Execution Planning" as developed by The Computer Integrated Construction (CIC) Research Group of The Pennsylvania State University. The bSa project is sponsored by The Charles Pankow Foundation, Construction Industry Institute (CII), Penn State Office of Physical Plant (OPP), and The Partnership for Achieving Construction Excellence (PACE). The template can be found at the following link:

[https://mrsi.usace.army.mil/rfp/Shared%20Documents/USACE\\_BIM\\_PXP\\_TEMPLATE\\_V1.0.pdf](https://mrsi.usace.army.mil/rfp/Shared%20Documents/USACE_BIM_PXP_TEMPLATE_V1.0.pdf)

Please note: Instructions and examples to assist with the completion of this template are currently in grey. The text can and should be modified to suit the needs of the organization filling out the template. If modified, the format of the text should be changed to match the rest of the document. This can be completed, in most cases, by selecting the normal style in the template styles.

**SECTION 01 45 04.00 10  
CONTRACTOR QUALITY CONTROL**

**1.0 GENERAL**

1.1. REFERENCES

1.2. PAYMENT

**2.0 PRODUCTS (NOT APPLICABLE)**

**3.0 EXECUTION**

3.1. GENERAL REQUIREMENTS

3.2. QUALITY CONTROL PLAN

3.3. COORDINATION MEETING

3.4. QUALITY CONTROL ORGANIZATION

3.5. SUBMITTALS AND DELIVERABLES

3.6. CONTROL

3.7. TESTS

3.8. COMPLETION INSPECTION

3.9. DOCUMENTATION

3.10. NOTIFICATION OF NONCOMPLIANCE

## **1.0 GENERAL**

### **1.1. REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. Refer to the latest edition, as of the date of the contract solicitation.

- ASTM INTERNATIONAL (ASTM)
- ASTM D 3740 Minimum Requirements for Agencies  
Engaged in the Testing and/or Inspection  
of Soil and Rock as Used in Engineering  
Design and Construction
- ASTM E 329 Agencies Engaged in the Testing  
and/or Inspection of Materials Used in  
Construction
- U.S. ARMY CORPS OF ENGINEERS (USACE)  
ER 1110-1-12 Quality Management

### **1.2. PAYMENT**

There will be no separate payment for providing and maintaining an effective Quality Control program. Include all costs associated therewith in the applicable unit prices or lump-sum prices contained in the Contract Line Item Schedule.

## **2.0 PRODUCTS (Not Applicable)**

## **3.0 EXECUTION**

### **3.1. GENERAL REQUIREMENTS**

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product, which complies with the contract requirements. The system shall cover all design and construction operations, both onsite and offsite, and shall be keyed to the proposed design and construction sequence. The site project superintendent is responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager at the site, responsible for the overall site activities, including but not limited to quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site. Different contractors have different names for the on-site overall project supervisor. For clarification, the term "site project superintendent" refers to the Contractor's senior site representative or "on-site manager", or other similar title, as those terms are used in contract Clause 52.236-7, "Superintendence by the Contractor" and in the Division 00 Section(s) of the solicitation for this contract or task order, or elsewhere in the contract. It does not refer to a construction superintendent, unless that person is also the Contractor's permanently assigned senior site representative in charge of all on-site activities.

### **3.2. QUALITY CONTROL PLAN**

Furnish for Government review, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Design and construction may begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. The Government will not permit work outside of the features of work included in an accepted interim plan to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started. Where the applicable Code issued by the International Code Council calls for an inspection by the Building Official, the Contractor shall include the inspections in the Quality Control Plan and shall perform the inspections. The Designer of Record shall develop a program for any special inspections required by the applicable International Codes and the Contractor shall perform these inspections, using qualified inspectors. Include the special inspection plan in the QC Plan.

### 3.2.1. Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all design and construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect/engineers (AE), fabricators, suppliers, and purchasing agents:

3.2.1.1. A description of the quality control organization. Include a chart showing lines of authority and an acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. A CQC System Manager shall report to the project superintendent or someone higher in the contractor's organization.

3.2.1.2. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function. Also include those responsible for performing and documenting the inspections required by the International Codes and the special inspection program developed by the designer of record.

3.2.1.3. A copy of the letter to the CQC System Manager, signed by an authorized official of the firm, which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Furnish copies of these letters.

3.2.1.4. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect engineers (AE), offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

3.2.1.5. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. Use only Government approved Laboratory facilities.

3.2.1.6. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

3.2.1.7. Procedures for tracking design and construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

3.2.1.8. Reporting procedures, including proposed reporting formats.

3.2.1.9. A list of the definable features of work. A definable feature of work is a task, which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

3.2.1.10. A list of all inspections required by the International Codes and the special inspection program required by the code and this contract.

### 3.2.2. Additional Requirements for Design Quality Control (DQC) Plan

The following additional requirements apply to the Design Quality Control (DQC) plan:

3.2.2.1. The Contractor's QCP Plan shall provide and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design-build contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, competent, independent reviewers identified in the DQC Plan shall review all documents. Use personnel who were not involved in the design effort to produce the design to perform the independent technical review (ITR). The ITR is intended as a quality control check of the design. Include, at least, but not necessarily limited to, a review of the contract requirements (the accepted contract or task order proposal and amended RFP), the basis of design, design calculations, the design configuration management documentation and check the design documents for errors, omissions, and for coordination and design integration. The ITR team is not required to examine, compare or comment concerning alternate design solutions but should concentrate on ensuring that the design meets the contract requirements. Correct errors and deficiencies in the design documents prior to submitting them to the Government.

3.2.2.2. Include in the DQC Plan the discipline-specific checklists to be used during the design and quality control of each submittal. Submit these completed checklists at each design phase as part of the project documentation.

3.2.2.3. A Design Quality Control Manager, who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated, shall implement the DQC Plan. This individual shall be a person who has verifiable engineering or architectural design experience and is a registered professional engineer or architect. Notify the Government, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

3.2.2.4. Develop and maintain effective, acceptable design configuration management (DCM) procedures to control and track all revisions to the design documents after the Interim Design Submission through submission of the As-Built documents. Include the DCM plan as a subset of the DQC Plan. See Section 'Design After Award'.

### 3.2.3. Acceptance of Plan

Government acceptance of the Contractor's plan is required prior to the start of design and construction. Acceptance is conditional and will be predicated on satisfactory performance during the design and construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

### 3.2.4. Notification of Changes

After acceptance of the CQC Plan, notify the Government in writing of any proposed change. Proposed changes are subject to Government acceptance.

### 3.3. COORDINATION MEETING

After the Postaward Conference, before start of design or construction, and prior to acceptance by the Government of the CQC Plan, the Contractor and the Government shall meet and discuss the Contractor's quality control system. Submit the CQC Plan for review a minimum of 7 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, design activities, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. The Government will prepare minutes of the meeting for signature by both parties. . The minutes shall become a part of the contract file. There may be occasions when either party will call for subsequent conferences to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

### 3.4. QUALITY CONTROL ORGANIZATION

#### 3.4.1. Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, a Design Quality Manager, and sufficient number of additional qualified personnel to ensure contract compliance. The CQC organization shall also include personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. Provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Promptly furnish complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation to the CQC organization. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

#### 3.4.2. CQC System Manager

Identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer, graduate architect, or a BA/BS graduate of an ACCE accredited construction management college program. The CQC system Manager may alternately be an engineering technician with at least 2 years of college and an ICC certification as a Commercial Building Inspector (Residential Building Inspector certification will be required for Military Family Housing projects). In addition, the CQC system manager shall have a minimum of 5 years construction experience on construction similar to this contract. The CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. Assign the CQC System Manager no other duties (except may also serve as Safety and Health Officer, if qualified and if allowed by Section 00 73 00, or by Section 00 73 10 if this is a task order). Identify an alternate for the CQC System Manager in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager but the alternate may have other duties in addition to serving in a temporary capacity as the acting QC manager.

#### 3.4.3. CQC Personnel

3.4.3.1. In addition to CQC personnel specified elsewhere in the contract provide specialized CQC personnel to assist the CQC System Manager in accordance with paragraph titled Area Qualifications.

3.4.3.2. These individuals may be employees of the prime or subcontractor; be responsible to the CQC System Manager; **are not intended to be full time, but must be physically present at the construction site during work on their areas of responsibility**; have the necessary education and/or

experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan. **One person may cover more than one area, provided that they are qualified to perform QC activities for the designated areas below and provided that they have adequate time to perform their duties:**

#### 3.4.4. Experience Matrix

##### 3.4.4.1. Area Qualifications

3.4.4.1.1. Civil - Graduate Civil Engineer or (BA/BS) graduate in construction management with 4 years experience in the type of work being performed on this project or engineering technician with 5 yrs related experience.

3.4.4.1.2. Mechanical - Graduate Mechanical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or engineering technician with an ICC certification as a Commercial Mechanical Inspector with 5 yrs related experience.

3.4.4.1.3. Electrical - Graduate Electrical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or engineering technician with an ICC certification as a Commercial Electrical Inspector with 5 yrs related experience.

3.4.4.1.4. Structural - Graduate Structural Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or person with an ICC certification as a Reinforced Concrete Special Inspector and Structural Steel and Bolting Special Inspector (as applicable to the type of construction involved) with 5 yrs related experience.

3.4.4.1.5. Plumbing - Graduate Mechanical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience, or person with an ICC certification as a Commercial Plumbing Inspector with 5 yrs related experience.

3.4.4.1.6. Concrete, Pavements and Soils Materials Technician (present while performing tests) with 2 yrs experience for the appropriate area

3.4.4.1.7. Testing, Adjusting and Balancing Specialist must be a member (TAB) Personnel of AABC or an experienced technician of the firm certified by the NEBB (present while testing, adjusting, balancing).

3.4.4.1.8. Design Quality Control Manager Registered Architect or Professional Engineer (not required on the construction site)

3.4.4.1.9. Registered Fire Protection Engineer with 4 years related experience or engineering technician with 5 yrs related experience (but see requirements for Fire Protection Engineer of Record to witness final testing in Section 01 10 00, paragraph 5.10, Fire Protection).

3.4.4.1.10. QC personnel assigned to the installation of the telecommunication system or any of its components shall be Building Industry Consulting Services International (BICSI) Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification. In lieu of BICSI certification, QC personnel shall have a minimum of 5 years experience in the installation of the specified copper and fiber optic cable and components. They shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products. QC personnel shall witness and certify the testing of telecommunications cabling and equipment.

#### 3.4.5. Additional Requirement



In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management for Contractors". This course is periodically offered at the Education Center, Bldg 660, at Ft Polk, LA. Contact Penny Smith (337). Inquire of the District or Division sponsoring the course for fees and other expenses involved, if any, for attendance at this course.

#### 3.4.6. Organizational Changes

When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

### 3.5. SUBMITTALS AND DELIVERABLES

Make submittals as specified in Section 01 33 00 **SUBMITTAL PROCEDURES**. The CQC organization shall certify that all submittals and deliverables are in compliance with the contract requirements.

### 3.6. CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. The CQC organization shall conduct at least three phases of control for each definable feature of the construction work as follows:

#### 3.6.1. Preparatory Phase

Perform this phase prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

3.6.1.1. A review of each paragraph of applicable specifications, reference codes, and standards. Make a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field at the preparatory inspection. Maintain these copies in the field, available for use by Government personnel until final acceptance of the work.

3.6.1.2. A review of the contract drawings.

3.6.1.3. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

3.6.1.4. Review of provisions that have been made to provide required control inspection and testing.

3.6.1.5. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

3.6.1.6. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

3.6.1.7. A review of the appropriate activity hazard analysis to assure safety requirements are met.

3.6.1.8. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

3.6.1.9. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

#### 3.6.1.10. Discussion of the initial control phase.

3.6.1.11. Notify the Government at least 24 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. Document the results of the preparatory phase actions by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

#### 3.6.2. Initial Phase

Accomplish this phase at the beginning of a definable feature of work. Include the following actions:

3.6.2.1. Check work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

3.6.2.2. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

3.6.2.3. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

3.6.2.4. Resolve all differences.

3.6.2.5. Check safety to include compliance with and upgrading of the Accident Prevention plan and activity hazard analysis. Review the activity analysis with each worker.

3.6.2.6. Notify the Government at least 24 hours in advance of beginning the initial phase. The CQC System Manager shall prepare and attach to the daily CQC report separate minutes of this phase. Indicate exact location of initial phase for future reference and comparison with follow-up phases.

3.6.2.7. Repeat the initial phase any time acceptable specified quality standards are not being met.

#### 3.6.3. Follow-up Phase

Perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Conduct final follow-up checks and correct deficiencies prior to the start of additional features of work which may be affected by the deficient work. Do not build upon nor conceal non-conforming work.

#### 3.6.4. Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

### 3.7. TESTS

#### 3.7.1. Testing Procedure

Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements and project design documents. Upon request, furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing

includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory, or establish an approved testing laboratory at the project site. The Contractor may elect to use a laboratory certified and accredited by the Concrete and cement Reference Laboratory (CCRL) or by AASHTO Materials Reference Laboratory (AMRL) for testing procedures that those organizations certify. The Contractor shall perform the following activities and record and provide the following data:

3.7.1.1. Verify that testing procedures comply with contract requirements and project design documents.

3.7.1.2. Verify that facilities and testing equipment are available and comply with testing standards.

3.7.1.3. Check test instrument calibration data against certified standards.

3.7.1.4. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

3.7.1.5. Include results of all tests taken, both passing and failing tests, recorded on the CQC report for the date taken. Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an offsite or commercial test facility directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

### 3.7.2. Testing Laboratories

#### 3.7.2.1. Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

#### 3.7.2.2. Capability Recheck

If the selected laboratory fails the capability check, the Government will assess the Contractor a charge of \$1,375 to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

### 3.7.3. Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

### 3.7.4. Furnishing or Transportation of Samples for Government Quality Assurance Testing

The Contractor is responsible for costs incidental to the transportation of samples or materials. Deliver samples of materials for test verification and acceptance testing by the Government to the Corps of Engineers Laboratory, f.o.b., at the following address:

- For delivery by mail:  
Geotechnical Testing Laboratory, Inc  
226 Parkwood Drive, P.O. Box 7734, Alexandria, LA 71306

- OR Ardanman & Associates, Inc  
P.O. Box 8595, Alexandria, LA 71306
- For other deliveries:  
Geotechnical Testing Laboratory, Inc  
(318)443-7429  
OR Ardanman & Associates, Inc  
(318)443-2888

The area or resident office will coordinate, exact delivery location, and dates for each specific test.

### 3.8. COMPLETION INSPECTION

#### 3.8.1. Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. Prepare a punch list of items which do not conform to the approved drawings and specifications and include in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

#### 3.8.2. Pre-Final Inspection

As soon as practicable after the notification above, the Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Correct any items noted on the Pre-Final inspection in a timely manner. Accomplish these inspections and any deficiency corrections required by this paragraph within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

#### 3.8.3. Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall attend the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups and major commands may also attend. The Government will formally schedule the final acceptance inspection based upon results of the Pre-Final inspection. Provide notice to the Government at least 14 days prior to the final acceptance inspection and include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

### 3.9. DOCUMENTATION

3.9.1. Maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers using

government-provided software, QCS (see Section 01 45 01.10). The report includes, as a minimum, the following information:

3.9.1.1. Contractor/subcontractor and their area of responsibility.

3.9.1.2. Operating plant/equipment with hours worked, idle, or down for repair.

3.9.1.3. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

3.9.1.4. Test and/or control activities performed with results and references to specifications/drawings requirements. Identify the applicable control phase (Preparatory, Initial, Follow-up). List deficiencies noted, along with corrective action.

3.9.1.5. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

3.9.1.6. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

3.9.1.7. Offsite surveillance activities, including actions taken.

3.9.1.8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

3.9.1.9. Instructions given/received and conflicts in plans and/or specifications.

3.9.1.10. Provide documentation of design quality control activities. For independent design reviews, provide, as a minimum, identity of the ITR team, the ITR review comments, responses and the record of resolution of the comments.

3.9.2. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. Furnish the original and one copy of these records in report form to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, submit one report for every 7 days of no work and on the last day of a no work period. Account for all calendar days throughout the life of the contract. The first report following a day of no work shall be for that day only. The CQC System Manager shall sign and date reports. The report shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel. The Contractor may submit these forms electronically, in lieu of hard copy.

### 3.10. NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

End of Section 01 45 04.00 10

**SECTION 01 50 02.1005  
TEMPORARY CONSTRUCTION FACILITIES**

**1.0 OVERVIEW**

1.1. GENERAL REQUIREMENTS

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

## **1.0 OVERVIEW**

### **1.1. GENERAL REQUIREMENTS**

1.1.1. This section contains requirements specifically applicable to this task order. The requirements of Base ID/IQ contract Section 01 50 02 apply to this task order, except as otherwise specified herein.

### **1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN**

1.3.1. Bulletin Board (As Specified in Base contract)

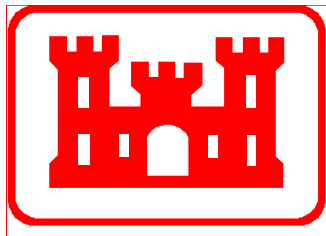
1.3.2. Project and Safety Signs (Added to Stress standardization of signs, in the event that the Base ID/IQ Section 01 50 02 does not contain this information)

Erect a project sign and a site safety sign with informational details as provided by the Government at the Post award conference, within 15 days prior to any work activity on project site. Update the safety sign data daily, with light colored metallic or non-metallic numerals. Remove the signs from the site upon completion of the project. Engineer Pamphlet EP 310-1-6a contains the standardized layout and construction details for the signs. It can be found through a GOOGLE Search or try <http://www.usace.army.mil/publications/eng-pamphlets/ep310-1-6a/s-16.pdf>.

End of Section 01 50 02.1005



**FORT POLK, LOUISIANA**  
**EMERGENCY SERVICE CENTER**  
**GOVERNMENT GEOTECHNICAL REPORT**  
**FOR DESIGN-BUILD PROJECT RFP**



**PREPARED BY**  
**U.S. ARMY CORPS OF ENGINEERS**  
**FORT WORTH DISTRICT**  
**ENGINEERING AND CONSTRUCTION DIVISION**  
**ENGINEERING SERVICES BRANCH**  
**GEOTECHNICAL SECTION**  
**CESWF-EC-DG**

**JULY 2008**  
***(TO BE ISSUED WITH RFP IN SEPTEMBER 2011)***

Friday, September 07, 2012

**FORT POLK, LOUISIANA  
EMERGENCY SERVICE CENTER**

**GOVERNMENT GEOTECHNICAL REPORT**

**1. General.** The purpose of this report is to provide subsurface information, and foundation and pavement design considerations, guidance, and requirements for a new Emergency Service Center at Fort Polk, Louisiana. Preliminary project planning information available at the time of this report indicates the new facility will be approximately 15,000 GSF in size, and will consist of an apparatus bay, an administration area, and a residential area. The apparatus bay will house fire/emergency vehicles and equipment. The administration area will include an emergency operation center, offices, and a restroom. The residential area is anticipated to include dorm rooms, restrooms and showers, kitchen, dining and break room areas, and a fitness room. Communication/mechanical/electrical rooms will also be included in the facility. Specific details of the structural framing and roofing systems, exterior and interior finishing systems, and other construction details were not known at the time of this report. However, it is anticipated that the new building construction will match existing building architectural styles of the surrounding area. New rigid pavement structures required for the project are anticipated to include a reinforced concrete access drive, floor slabs within vehicle bays, and concrete aprons in front of trash dumpster pads. New flexible pavement structures required for the project are anticipated to include a turning lane from Louisiana Avenue to Mississippi Avenue, privately-owned vehicle (POV) parking area(s) and asphalt overlays for existing medium- to heavy-duty pavement structures. Support features for the project are anticipated to include sidewalks, utilities, and landscaping.

The proposed Emergency Service Center site is located in the central part of the Fort Polk main cantonment area. Specifically, the project site is bounded to the north by Louisiana Avenue, to the east by Mississippi Avenue, and approximately to the southwest by Missouri Avenue (with a proposed POV parking area located immediately south of Missouri Avenue). The site is developed and predominantly clear of vegetation (although there are several scattered oak, pine, holly, and

**FORT POLK, LOUISIANA  
EMERGENCY SERVICE CENTER**

other trees across the site). Other potential obstacles to construction include several concrete pads and sidewalks, and existing asphalt pavement areas across the site. Existing grades across the entire project site range from approximate elevation 310.0 feet National Geodetic Vertical Datum (NGVD) to 340.0 feet (NGVD), generally sloping downgradient to the south and west. Existing grades within the anticipated building footprint area range from approximate elevation 335.0 feet (NGVD) to 339.5 feet (NGVD).

**2. Subsurface Investigation.** Twelve (12) test holes were drilled at the Emergency Service Center site in April 2008 by Tetra Tech. Tetra Tech accomplished the geotechnical field investigation with a Mobile B-57 truck-mounted drill rig using 6- and 7-inch (O.D.) solid stem continuous flight augers, a nominal 3-inch diameter shelby tube sampler, and a nominal 2-inch diameter split spoon sampler. The borings were advanced to total depths ranging from 10.0 feet to 60.0 feet below existing grade. Representative soil samples recovered from the borings were placed in containers and delivered to the laboratory of TEAM Consultants, Incorporated (Arlington, Texas) for testing. Results of the field investigation are presented on Sheet B101, Boring Locations, and Sheets B201 through B203, Logs of Borings (Appendix A).

a. **Groundwater Conditions.** Groundwater conditions were monitored during drilling operations and after observation periods of up to 24 hours. Static groundwater levels were measured within the four borings drilled to 60.0 feet during the field investigation, with depths ranging from 22.6 feet to 26.5 feet below existing grade. The eight remaining (10.0-foot) test holes were dry. Tabulated below are the water levels reported at the time of the field investigation. It should be noted that groundwater conditions are relative to the time of drilling, annual precipitation, and drainage conditions at the site.

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<u>Boring</u>	<u>Static Level, feet</u>
8A2S-ESC-1	23.0
8A2S-ESC-2	26.5
8A2S-ESC-3	22.6
8A2S-ESC-4	23.2

b. Dynamic Cone Penetrometer Testing. Dynamic Cone Penetrometer (DCP) testing for pavement design considerations was performed in borings 10A2S-ESC-5, 10A2S-ESC-6, 10A2S-ESC-7, 10A2S-ESC-8, 10A2S-ESC-9, 10A2S-ESC-10, 10A2S-ESC-11, and 10A2S-ESC-12. DCP test results are discussed later in this report, and will be presented as Appendix D of the final report.

c. Soil Resistivity Testing. A soil resistivity test was performed at the approximate location of boring 8A2S-ESC-4. The resistivity value measured in the field is 24,466 ohm-cm. Soil resistivity test results are provided in the 'Remarks' column of the aforementioned log of boring (Appendix A).

### 3. Subsurface Conditions.

a. General Geology. Fort Polk lies within the West Gulf Coastal Plain section of the Coastal Plain physiographic province. The coastal plain of Louisiana is characterized by a broad rolling landform extending from the foot of the Ouachita Mountains on the north to the Gulf of Mexico on the south. It has developed upon a sequence of sedimentary rock units which dip gently southward, resulting in successively younger formations cropping out towards the Gulf. Most of Fort Polk lies within the outcrop area of the Fleming Formation, a complex sequence of sands and clays of Miocene age. Fisk (1940) divided the Fleming Formation into six members, distinguished from each other as being predominantly clayey zones or sandy zones. Although not accepted for use by the U.S. Geological Survey, the members are correlatable throughout several parishes on electric logs and show up as sandy intervals separated by clayey intervals. From oldest to youngest the members are: Lena, Carnahan Bayou, Dough Hills, Williamson Creek, Castor Creek,

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and Blounts Creek. The predominantly sandy members contain the aquifers that supply groundwater to Fort Polk.

Deposits of Pleistocene age continuously overlie the Fleming Formation within the extreme southeastern portion of Fort Polk. Elsewhere on the military reservation, these deposits form terraces that parallel the major streams and occur as isolated remnants mantling interstream highs. These deposits are fluvial in nature and are generally coarser grained than the underlying Miocene deposits.

Sediments of recent age are confined to alluvial deposits in the larger stream valleys and as a thin veneer of residual soils developed upon primary materials.

South Fort Polk is situated upon the outcrop area of the Blounts Creek member. This member is a complex sequence of sands and clays. Sand beds make up 35 to 45 percent of the member (Rogers and Calandro, 1965). Numerous remnants of Pleistocene age occur upon the outcrop of the Blounts Creek. Residual soils developed upon the outcrop of the member are as complex and variable as the parent material from which it was derived.

b. Site Conditions. The proposed Emergency Service Center site is bounded to the north by Louisiana Avenue, to the east by Mississippi Avenue, and approximately to the southwest by Missouri Avenue (with a proposed POV parking area located immediately south of Missouri Avenue). The site is developed and predominantly clear of vegetation (although there are several scattered oak, pine, holly, and other trees across the site). Other potential obstacles to construction include several concrete pads and sidewalks, and existing asphalt pavement areas across the site. Existing grades across the entire project site range from approximate elevation 310.0 feet National Geodetic Vertical Datum (NGVD) to 340.0 feet (NGVD), generally sloping downgradient to the south and west. Existing grades within the anticipated building footprint area range from approximate elevation 335.0 feet (NGVD) to 339.5 feet (NGVD).

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Stratigraphically, the site is characterized by interbedded deposits of silty sand (SM), clayey sand (SC), poorly graded sand with silt (SP-SM), and silty sand with clay (SM-SC) to depths ranging from 32.3 feet to 37.1 feet below existing grade at the test hole locations, below which is a stratum of high plasticity clay (CH) that persists to the total depth investigated (60.0 feet). The sandy soils are predominantly composed of fine sand size particles and fines, with minor amounts (generally less than 5 percent) of medium sand size particles, and little to no coarse sand and gravel in approximately the upper 20.0 to 25.0 feet. However, the fines content decreases sharply (from between 15 and 50 percent to between 4 and 14 percent) at depths below existing grade of between 20.0 to 25.0 feet. This change in the percentage of fines remains constant below this point to the contact with the underlying high plasticity clay stratum. Within this same zone, the medium sand component increases significantly (up to approximately 30 percent by weight). It should be noted that water-bearing soils were encountered within this zone during drilling, and all static groundwater levels were also measured within this zone. The clayey and silty sands are moist to water-bearing (as noted above), and range in color from brown to light brown, to yellow brown, to red brown, to red, to purple, to white. The sandy soils are loose within the upper 3.0 feet, and range from very loose to medium dense between approximately 3.0 feet and 5.0 feet, below which, the sandy soils increase in relative density to medium dense (on average) between 5.0 feet and 12.0 feet. Below approximately 12.0 feet, the sandy soils continue to decrease in relative density, on average, to the contact with the underlying high plasticity clay stratum. Atterberg limits test results for the silty and clayey sands indicate these soils have liquid limits ranging from 18 to 51 percent, plastic limits varying from 13 to 17 percent (with plasticity indices ranging from 5 to 34 percent), and in situ moisture contents varying from approximately 5 to 26 percent. It should be noted that all of the silty sand specimens (including SM and SP-SM soils), collected at various depths above the CH clay stratum in the test holes, subjected to Atterberg limits testing were determined to be non-plastic.

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A stratum of high plasticity (CH) clay is present at depths ranging from approximately 32.3 feet to 37.1 feet below existing grade at the test hole locations, with the contact depth below existing grade increasing slightly from west to east across the area of anticipated building construction. The high plasticity clay is soft to stiff, moist, yellow brown to gray to purple, and slightly sandy. It should be noted that the sand (fine) content increases gradually (from less than 5 percent to about 25 percent by weight) between approximately 40.0 feet to 60.0 feet below existing grade. Atterberg limits testing results indicate the high plasticity clay soils have liquid limits ranging from 53 to 116 percent, plastic limits varying from 15 to 31 percent (with plasticity indices ranging from 35 to 85 percent), and in situ moisture contents varying from approximately 18 to 49 percent.

Subsurface conditions representative of the project site are shown on the boring logs, Sheets B201 and B202 (Appendix A). The legend on the individual boring logs shows overburden materials as classified in the laboratory using procedures presented in ASTM D 2488. It should be noted that the actual interface between material types may be far more gradual or abrupt than represented; therefore, actual subsurface conditions in areas not sampled may differ from those predicted. The nature and extent of variations across the site may not become evident until construction commences, and the actual construction process may alter subsurface conditions as well. If variations become evident at the time of construction, CESWF-EC-DG should be contacted to determine if the recommendations presented in this report need to be reevaluated.

#### **4. Testing.**

a. Laboratory Testing. Representative soil samples recovered from the borings were subjected to laboratory testing for identification, moisture content, grain-size distribution, Atterberg limits, density, strength, and controlled expansion-consolidation. The accumulative test results are presented in Appendix C. Results of identification testing are shown on the individual boring logs, Sheets B201 through B203 (Appendix A). The visual descriptions and Unified Soil

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Classifications presented on the logs are based on test methods presented in ASTM D 2488. Descriptions of overburden materials were changed to correspond with the laboratory classification.

The laboratory test results are also presented graphically in Appendix B as follows: Plasticity characteristics are shown on Plate 1, Plasticity Chart. Moisture content values are shown with respect to depth on Plate 2. Atterberg limits test results are shown with respect to depth on Plate 3. Dry density values of representative undisturbed samples and their corresponding moisture contents are shown with respect to depth on Plate 4. Ultimate compressive strengths of the clayey soils are shown with respect to depth on Plate 5. Standard penetration testing results (N-values) are shown with respect to depth on Plate 6.

(1) Shear Strength Testing. Shear strength characteristics of the cohesive soils were analyzed in the laboratory using one-point unconsolidated-undrained triaxial compression testing, confining the specimens to overburden pressure and then loading to failure. The ultimate compressive strengths recorded are presented below and in Appendix C at the end of this report.

<u>Boring</u>	<u>Depth, ft</u>	<u><math>\gamma_d</math>, pcf</u>	<u><math>Q_u</math>, tsf</u>	<u>Material Type</u>
8A2S-ESC-4	9.0	112.7	2.359	SC Clayey Sand Overburden
8A2S-ESC-4	49.0	112.3	4.040	CH Clay Overburden

(2) Controlled Expansion-Consolidation Testing. Controlled expansion-consolidation (CEC) testing was performed on one specimen of clayey sand (SC) overburden and on one specimen of high plasticity (CH) clay overburden to determine the shrink-swell potential of these materials. Both specimens were collected within boring 8A2S-ESC-4. The clayey sand specimen, collected at a depth of 9.0 feet, has a liquid limit of 28 percent, a plastic limit of 14 percent (PI = 14 percent), and a natural moisture content of approximately 15 percent. An expansion pressure ( $p_{exp}$ ) of approximately 0.25 tsf was recorded during CEC testing on this clayey sand specimen. Based on CEC test results, the clayey sand specimen collected at a depth of 9.0



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feet within boring 8A2S-ESC-4 has a low expansion potential ( $C_s = 0.007$ ;  $p_{exp}/p_0 = 0.4$ ) and a moderate potential for consolidation ( $C_c = 0.105$ ). Controlled expansion-consolidation testing also was performed on a specimen of high plasticity clay (CH) collected at a depth of 49.0 feet within boring 8A2S-ESC-4. This CH clay specimen has a liquid limit of 53 percent, a plastic limit of 15 percent ( $PI = 38$  percent), and a natural moisture content of approximately 18 percent. An expansion pressure ( $p_{exp}$ ) of approximately 0.75 tsf was recorded during CEC testing on this high plasticity specimen. Based on CEC test results, the CH clay specimen collected at a depth of 49.0 feet within boring 8A2S-ESC-4 has a low to moderate expansion potential ( $C_s = 0.035$ ;  $p_{exp}/p_0 = 0.2$ ) and a moderate potential for consolidation ( $C_c = 0.136$ ). CEC test results are summarized below and are included in Appendix C at the end of this report.

<u>Boring</u>	<u>Depth, feet</u>	<u>LL</u>	<u>&amp; PI</u>	<u><math>P_{exp}</math>, tsf</u>	<u><math>P_{exp}/P_0</math></u>	<u><math>C_s</math></u>	<u>&amp; <math>C_c</math></u>	<u>Material Type</u>
8A2S-ESC-4	9.0	28	14	0.25	0.4	0.007	0.105	Clayey Sand Overburden
8A2S-ESC-4	49.0	53	38	0.75	0.2	0.035	0.136	CH Clay Overburden

b. Field Testing.

(1) Standard Penetration Testing. Standard penetration testing was performed in all twelve borings. The standard penetration tests were conducted at approximately 2.5-foot intervals within sandy soil intervals within the borings. A standard penetration test consists of driving a standard 1.5-inch (I.D.) diameter split-spoon sampler 18 inches into the soil using a 140-pound free-falling hammer dropped a distance of 30 inches. The number of blows required for each 6 inches of penetration is recorded. Penetration resistance ( $N$ ) is defined as the sum of blows required to drive the second and third increments, or the final 12 inches. It should be noted that “refusal” is taken as a blow count of 50 or more per 6-inch increment.

Standard penetration testing is performed to evaluate the relative densities of the in situ soils for foundation design considerations. The results are used to calculate the shear strength of

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the in situ soils and settlements relative to given load conditions. Based on standard penetration testing performed at the Emergency Service Center site, the silty and clayey sandy soils within the upper 3.0 feet are loose (with average N-values ranging from 6 to 10). At depths between approximately 3.0 feet and 5.0 feet, the in situ sandy soils range in relative density from very loose to medium dense (with average N-values ranging from 3 to 16). Between approximately 5.0 feet and 12.0 feet, the average relative density of the in situ sandy soils increases to medium dense (but ranges from very loose to very dense, with average N-values ranging from 3 to 84). Below approximately 12.0 feet, the sandy soils decrease in average relative density (to loose to medium dense) to the contact with the underlying high plasticity clay stratum, where average N-values typically are in the range of 5 to 20. Standard penetration testing generally was not conducted in the cohesive soils (CH clay stratum), except for a single test conducted within boring 8A2S-ESC-3 at a depth of 56.0 feet, where an average N-value of 36 was recorded.

(2) Dynamic Cone Penetrometer Testing. Dynamic Cone Penetrometer (DCP) testing was performed in borings 10A2S-ESC-5, 10A2S-ESC-6, 10A2S-ESC-7, 10A2S-ESC-8, 10A2S-ESC-9, 10A2S-ESC-10, 10A2S-ESC-11, and 10A2S-ESC-12 for pavement design considerations. A DCP consists of a steel rod with a steel cone attached to one end and a sliding single-mass hammer. For this project, the DCP test was performed by driving the steel cone into the soil using a 17.6-pound sliding hammer dropped from a height of 22.6 inches (574 millimeters). The number of blows required for each 0.4 inch (10-mm) or greater of penetration was recorded as the “penetration per blow set”; therefore, the more penetration achieved per blow indicates that a “weaker” soil layer was encountered. Typically, penetration measurements are taken to a depth of 39.4 inches (1000 millimeters) or when refusal is achieved. Refusal is defined as the point at which the cone cannot penetrate the soil more than 0.4 inches (10 millimeters). Presented below are the average in situ strength parameters derived from the DCP tests.

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<u>Depth, in</u>	<u>CBR, %</u>	<u>k, pci</u>
0 – 6	4 – 34	124 – 323
6 – 12	3 – 35	95 – 333
>12	1 – 22	51 – 282

**5. Discussions.** The following discussions are provided in support of the foundation and pavement design recommendations and requirements made herein for the proposed Emergency Service Center project. It should be noted that the discussions presented herein are based on the results of the Government geotechnical field investigation and laboratory testing program conducted at the site, as described previously in this report, as well as engineering studies, and previous engineering experience with similar structures at Fort Polk. The Design-Build Contractor shall heed the information provided in this report and comply with the requirements and recommendations presented herein when developing his foundation and pavement designs. **The**

**Design-Build Contractor's foundation designs are required to comply with and to meet or exceed the minimum foundation and pavement design requirements and recommendations presented herein.** The bidders for this design-build contract project may use the subsurface boring log and lab testing data presented herein as a basis to formulate their foundation and pavement designs for the purposes of developing a bid for the project Request for Proposal (RFP) solicitation, or, at their option, may supplement these data with their own geotechnical field investigations and laboratory testing programs. **Supplemental geotechnical field investigations conducted by the Design-Build Contractor shall be ONLY for the purpose of supplementing the data regarding the subsurface conditions provided herein.**

Laboratory testing performed by the Design-Build Contractor (and/or their associates) is required to meet the following standards (at a minimum): Tests on disturbed specimens of overburden soils shall include classification (ASTM D 2488), moisture content (ASTM D 2216), grain size analysis (ASTM D 422), and Atterberg limits (ASTM D 4318). Undisturbed (shelby tube) specimens of the overburden soils

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shall also be collected; tests on undisturbed specimens of the overburden soil shall include the tests listed for disturbed specimens, as well as controlled expansion-consolidation testing (ASTM D 2435 and ASTM D 4546 (Method C)), density (Corps of Engineers Engineer Manual (EM) 1110-2-1906, Appendix II, Par. 4, Displacement Method), and strength testing (ASTM D 2850).

***Development of the final foundation and pavement designs is the responsibility of the Design-Build Contractor; however, the Design-Build Contractor's final foundation and pavement designs shall be in full compliance with the requirements prescribed herein (including foundation type, foundation design parameters, and minimum pavement sections and pavement design criteria and parameters).*** The Design-Build Contractor shall provide to the Government

engineering studies and design calculations that support the foundation and pavement design recommendations they or their associates propose. The Design-Build Contractor's foundation and pavement design recommendations shall be reviewed for technical adequacy and compliance with the criteria established herein and in the Request for Proposal (RFP). Specific requirements for the Design-Build Contractor's foundation and pavement design analysis are provided in section 6.c.

a. Soil Activity Considerations. The Emergency Service Center site is characterized by interbedded deposits of silty sand (SM), clayey sand (SC), poorly graded sand with silt (SP-SM), and silty sand with clay (SM-SC) to depths ranging from 32.3 feet to 37.1 feet below existing grade at the test hole locations, below which is a stratum of high plasticity clay (CH) that persists to the total depth investigated (60.0 feet). Atterberg limits test results for the silty and clayey sands indicate these soils have liquid limits ranging from 18 to 51 percent, plastic limits varying from 13 to 17 percent (with plasticity indices ranging from 5 to 34 percent), and in situ moisture contents varying from approximately 5 to 26 percent. Atterberg limits testing results indicate the underlying high plasticity clay soils have liquid limits ranging from 53 to 116 percent, plastic limits varying from 15 to 31 percent (with plasticity indices ranging from 35 to 85 percent), and in

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situ moisture contents varying from approximately 18 to 49 percent.

Controlled expansion-consolidation (CEC) testing was performed on two specimens of cohesive overburden soil collected at the Emergency Service Center project site. Based on CEC testing, a clayey sand (SC) specimen collected at a depth of 9.0 feet within boring 8A2S-ESC-4 is overconsolidated, having experienced a preconsolidation pressure of approximately 2.15 tsf. This clayey sand specimen is considered to have a low expansion potential ( $C_s = 0.007$ ;  $p_{exp}/p_0 = 0.4$ ), and a moderate consolidation potential ( $C_c = 0.105$ ). Controlled expansion-consolidation testing was also performed on a specimen of high plasticity clay (CH) overburden collected at a depth of 49.0 feet within boring 8A2S-ESC-4. Based on CEC testing, the CH clay specimen is overconsolidated, having experienced a preconsolidation pressure of approximately 5.7 tsf. This clayey sand specimen is considered to have a low to moderate expansion potential ( $C_s = 0.035$ ;  $p_{exp}/p_0 = 0.2$ ), and a moderate consolidation potential ( $C_c = 0.136$ ).

Based on the results of Atterberg limits and in situ moisture content testing, and engineering judgment and experience at Fort Polk, an active zone of at least 15.0 feet shall be used for expansive soils analyses. Also, based on the results of CEC testing and standard penetration test results, the loose silty and clayey sand soils near the surface are anticipated to be more susceptible to consolidation than heave. The results of Atterberg limits testing and CEC testing indicate that the underlying high plasticity clay soils are potentially susceptible to both heave and consolidation. Liquid limits well above 100 percent were measured in specimens collected within this stratum, and the portion of this stratum between the contact with the overlying sandy soils and extending to a depth of approximately 55 feet below existing grade is considered to have a moderate to very high potential for expansion. However, of equal or even greater concern is the amount by which the in situ moisture contents exceed the plastic limits within the CH clay stratum. The in situ moisture content measured in each specimen collected within this stratum was above the plastic limit; in fact, most in situ moisture contents measured in the CH clay stratum specimens

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exceeded the plastic limit by well over 10 percent (and the in situ moisture content of one CH clay specimen collected within boring 8A2S-ESC-2 at a depth of 37.5 feet exceeded the plastic limit of the specimen by 22 percent). Consequently, although the CH clay stratum is considered susceptible to heave, it is considered even more susceptible to consolidation. Once built upon, these materials can experience significant volumetric changes when their in situ moisture environment is altered. These volumetric change capacities necessitate special requirements with regard to the foundation design and earthwork activities for the new project construction, as are provided herein, to ensure adequate foundation performance.

b. Foundation Design Considerations. A variety of foundation systems have been utilized with success at Fort Polk, depending on site-specific subsurface conditions. Shallow foundation systems include reinforced concrete ribbed and flat mat slabs. Deep foundation systems include pre-cast reinforced concrete driven piles and reinforced concrete drilled and underreamed piers. Considerations associated with deep and shallow foundation systems are discussed in the following paragraphs.

A deep foundation system will not be necessary to support the anticipated building loads. Furthermore, the in situ soils exhibit no significant increase in strength with depth; hence there is no bearing capacity advantage of a deep foundation system of either driven piles or underreamed piers. The high groundwater levels and loose sandy soils would also increase the difficulty in constructing a drilled and underreamed pier foundation system. Also, heave forces acting upon pier or pile foundations from the very high plasticity clays present at the site, and potentially large settlements that could be induced within the clay stratum by deep foundations could create significant structural distress within the facility. Lastly, it is anticipated that a shallow foundation system could be constructed more economically than a deep foundation system. Therefore, **a deep foundation system shall not be used for this facility.**

In light of the comparatively low relative density of the in situ silty and clayey sand

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overburden soils identified during the geotechnical field investigation, these soils can be expected to be susceptible to both total and differential settlements from shallow foundation loads. Thus a shallow foundation will need to act monolithically to ensure differential movements do not exceed tolerable limits. The best foundation performance for this facility can be achieved by a reinforced concrete ribbed mat slab or flat mat slab. A properly designed and constructed ribbed mat or flat mat slab will act monolithically, would be anticipated to be constructed above the groundwater level (particularly if built within a fill section), and also would be assigned an allowable bearing capacity that would minimize the potential for excessive total or differential settlements to occur.

**Therefore, the Design-Build Contractor shall limit consideration for foundation systems to the following two shallow foundation systems: 1) a reinforced concrete ribbed mat slab; or 3) a reinforced concrete flat mat slab.** Foundation design requirements for the mat slab foundation systems for the proposed facilities are provided in Section 6.a.

**IT IS REQUIRED THAT ALL FOUNDATION, FLOOR SLAB, AND EARTHWORK DESIGNS AND CONSTRUCTION BY THE DESIGN-BUILD CONTRACTOR AND THEIR ASSOCIATES SHALL COMPLY WITH THE MINIMUM REQUIREMENTS PRESENTED HEREIN.**

c. Pavement Design Considerations. The pavement designs presented in this report are based on criteria contained in *UFC 3-250-01FA*, *UFC 3-250-18FA*, and engineering judgment.

(1) Traffic Types and Conditions. Six (6) pavement structures were analyzed and for this project, with minimum designs presented herein. New rigid pavement includes access drives, aprons in front of trash dumpster pad(s), and floor slabs within vehicle bays. New flexible pavement includes a new turning lane from Louisiana Avenue to Mississippi Avenue, privately-owned vehicle (POV) parking areas and asphalt overlays for existing medium- to heavy-duty pavement structures. Types of vehicles expected to occupy the pavements are passenger cars and trucks, two- and three-axle trucks, and fire/emergency medical vehicles. Based on information available at the time of this report, the user anticipates the following vehicles will utilize the

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access drives and floor slabs within vehicle bays:

<u>Vehicle Designation</u>	<u>Length</u>	<u>Gross Vehicular Weight</u>
Ladder-1	41'-1"	67,000 lbs
HAZMAT-1	32'-1"	29,400 lbs
Pumper-1	30'	29,820 lbs
Pumper-2	30'-11"	38,400 lbs
Rescue-1	27'-4"	35,000 lbs
Crash-3	33'-4"	34,000 lbs

Pavement designs for the access drives and floor slabs within vehicle bays were developed using PCASE pavement analysis and design software. In the analysis, it was assumed that each vehicle would make approximately 3,000 passes per year over the applicable pavement structure. Assuming a 25-year design life for the pavement structures, and using equivalent loadings for a P-23 Crash Truck, yields a total of 262,500 passes of a P-23 Crash Truck over a 25-year period. The minimum pavement sections for access drives and floor slabs in vehicle bays are presented in section 6.b.(1). The turning lane from Louisiana Avenue to Mississippi Avenue may experience the largest vehicular traffic on the post, specifically 120-kip M1A1 Abrams tank traffic (Category VII Traffic). It is anticipated that this Category VII traffic will make limited passes (no greater than 10 passes per day) on this pavement structure; this results in a pavement Design Index equal to 8. Based on criteria contained in the aforementioned Technical Manuals, the following traffic conditions were assigned for the remaining pavement structures:

<u>Pavement Structure</u>	<u>Traffic Category</u>	<u>Street Class</u>	<u>Design Index</u>
POV Parking Area	II	E	2
Pavement Overlays	IVA	D	5
Apron (Trash)	IVA	F	4
Turning Lane (Louisiana Ave. to Mississippi Ave.)	VII making up to 10 passes/day		10

(2) Pavement Design Parameters. California Bearing Ratio (CBR) and plate bearing tests were not conducted for this project. Instead, dynamic cone penetrometer (DCP)



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testing was conducted to evaluate the raw subgrade for pavement design considerations. The penetration resistance obtained from the DCP test is a measure of the soil's relative density, which in turn is used to derive "in situ" CBR and modulus of subgrade reaction values.

The average in situ CBR values measured within the upper 12 inches of soils tested at the Emergency Service Center site range from approximately 3 to 35 percent, and below this depth, CBR values range from 1 to 22 percent. Modulus of subgrade reaction values measured within the upper 12 inches of soils tested range from 95 to 333 pci, and below this depth, modulus of subgrade reaction values range from 51 to 282 pci. Laboratory CBR tests previously have been performed on similar subgrade materials collected at Fort Polk. The results indicate that CBR values between 3 and 4 can be expected for the sandy and clayey subgrade when compacted to 90 percent of maximum laboratory density. Previously conducted plate-bearing tests indicate the modulus of subgrade reaction for this material to range from 100 pci to 150 pci. Based on these considerations, and the high variability of in situ CBR and subgrade modulus values correlated from the DCP testing, design CBR and modulus of subgrade reaction values of 4 percent and 100 pci, respectively, were assigned to the raw subgrade when compacted to 90 percent of laboratory maximum density (ASTM D 1557). To ensure that these design CBR and modulus of subgrade reaction values are achieved, the upper 6 inches of raw subgrade materials directly underlying the base course layer(s), as specified herein, shall consist of satisfactory materials, *excluding* materials that classify as CH materials. If the upper 6 inches of raw subgrade directly underlying the base course layer(s) are CH materials, the upper 6 inches of these materials shall be removed and replaced with satisfactory materials (excluding CH materials), and compacted to the density specified for raw subgrade underlying pavements. The CBR value considered for the sand clay gravel base material is 50.

**6. Recommendations and Requirements.** The following foundation and pavement design recommendations and requirements are based on the results of the field investigation, laboratory

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testing, engineering studies, and the criteria cited herein.

a. Foundation Design Recommendations and Requirements.

(1) Foundation System. The proposed Emergency Service Center shall be founded on either a reinforced concrete ribbed mat or flat mat foundation system in accordance with the recommendations and requirements specified herein. **NO OTHER FOUNDATION SYSTEMS**

**SHALL BE ALLOWED FOR THE EMERGENCY SERVICE CENTER. THE FOLLOWING FOUNDATION SYSTEMS ARE SPECIFICALLY PROHIBITED: SPOT AND/OR CONTINUOUS SPREAD FOOTINGS, REINFORCED CONCRETE DRILLED PIERS (STRAIGHT-SHAFT OR U UNDERREAMED), DRIVEN OR CAST-IN-PLACE PILES, AND AUGER CAST PILES.**

Criteria for Site Class D shall be utilized for foundation seismic design purposes, as presented in *UFC 3-310-04 – Seismic Design for Buildings*.

(a) Reinforced Concrete Ribbed Mat or Flat Mat Slab. Alternatively, the proposed Emergency Service Center can be supported on either a reinforced concrete ribbed mat slab or a flat mat slab foundation system. **The mat slabs shall be conventionally reinforced – POST-TENSIONED SLABS ARE NOT ALLOWED.** A ribbed mat slab consists of a grid of stiffening ribs cast monolithically with the floor slab. The monolithic nature of this system allows the foundation to span or cantilever areas where a loss of support may occur; thus potential differential settlements are spread over a large horizontal area by the ribs through soil-structure interaction. The mat should be analyzed and designed for 1.0 inch of long-term differential movement. For this reason, interior ribs should be spaced no further than 15 feet center-to-center, and diagonal stiffener ribs should be placed at each corner of the mat slab. Design of the ribbed mat slab should meet the minimum requirements as presented in *CESWD-ED-TS/G Criteria Letter, dated 29 January 1988 – Design Criteria for Ribbed Mat Foundations, SWDED-G Criteria Letter, dated 16 April 1987 – Criteria for Developing Geotechnical Design Parameters*

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*for SWD Ribbed Mat Design Methodology*, and the recommendations provided herein.

Interior and exterior beams should bottom a minimum of 24 inches below outside finished grade. An allowable bearing capacity of 2.0 ksf (net) should be used to size the beams. For this phase of design, it should be noted that (1) the structural load is supported solely on the beam and the beam intersections, (2) load transfer occurs over the effective beam width, and (3) the beam and soil remain in contact. Beam intersections should be widened at column locations to accommodate the above allowable bearing value for the anticipated load condition. The load used to size the beams should consist of full dead load plus that portion of the live load that acts more or less continuously, usually 50 percent.

The ribbed mat slab foundations should incorporate adequate stiffness such that the deformations do not exceed the structural tolerance of any elements in the foundation or superstructure. Analyses should consider a vertical separation of the foundation slab and beams from the subgrade of 1.0 inch at the outside of all perimeter beams, with loss of support beneath the foundation over a horizontal distance of not less than 4.5 feet. This loss of support condition corresponds to the **center lift mode**. Additionally, **edge lift analyses** should consider an edge moisture variation distance equal to 5.25 feet, and an edge lift heave of 1.0 inch should be used in the design of the ribbed mat slab. This edge lift heave corresponds to an applied structural pressure of 100 psf. For edge lift considerations, two additional combinations of pressure and swell are required. For an allowable bearing capacity of 2.0 ksf, an edge lift heave of 0.75-inch can be expected to occur. At an ultimate bearing capacity of 6.0 ksf, 0.5-inch of heave should be anticipated. It should be noted that these anticipated heave amounts are based on a minimum of 3.0 feet of compacted nonexpansive fill, as recommended in this report. **If additional soils investigations, testing, and analyses show that a more stringent design is required to successfully mitigate total and differential movements due to settlement and/or heave, the foundation shall be designed accordingly.**

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A modulus of subgrade reaction equal to 200 psi/inch should be used when analyzing the ribbed mat slabs to determine in-service deformations. This value, however, should be factored to account for width effects such that  $k_{\text{design}} = k_1(B_{\text{eff}})$ , where  $B_{\text{eff}}$  is the effective beam width in feet. Design of the ribbed mat slabs may use the *SWD-AEIM* sections as a minimum stiffness "first approximation".

A reinforced concrete flat mat foundation should have a uniform thickness of not less than 2.0 feet. The mat should be tapered as required to ensure the perimeter of the slab extends to a constant elevation and is at least 24 inches below outside finish grade. An allowable bearing pressure of 2.0 ksf (net) shall be used to design the flat mat slabs. The load used to size flat mat slabs should consist of the full dead load plus that portion of the live load that reacts continuously, usually 50 percent. Flat mat slabs also should incorporate adequate stiffness such that the deformations do not exceed the structural tolerances of any element of the foundations or superstructures. Flat mat slabs should be analyzed for stiffness using the same edge and center lift mode analysis parameters as provided in this report for ribbed mat slab foundations.

The mat slabs will, by design, be supported on-grade. A polyethylene vapor barrier (10-mil minimum thickness) and a minimum 6-inch capillary water barrier should be placed beneath the mat slab.

Due to the presence of loose to very loose soils within the zone of influence for a shallow foundation system, a minimum of 2.0 feet of existing soils shall be removed (excavated) below the base of the ribs (for a ribbed mat slab foundation) or the base of the mat slab, and replaced with compacted lifts of nonexpansive fill. Nonexpansive fill shall be placed in controlled lifts not exceeding 8 inches in loose thickness and compacted to at least 95 percent of maximum laboratory density as determined in accordance with ASTM D 1557 between the excavation surface and the base of the ribs/flat mat slab.

(c) Small Support-type Structures. Small support-type structures (<500

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GSF), if used, can be supported on reinforced concrete slabs-on-grade with turned-down edge beams. The turned-down edge beam should extend a minimum of 12 inches below outside finished grade and can be sized for a safe bearing pressure of 2,000 psf (net). Subgrade preparation should consist of providing a minimum of 24 inches of compacted nonexpansive fill below the base of the soil-supported slab.

(2) Floor Slab Systems. The mat slab systems will, by design, be supported on-grade.

(3) Subgrade Preparation Requirements. Subgrade preparation for mat ribs and mat slabs shall ensure that a minimum of 2.0 feet of existing soil below the base of these features shall be removed and replaced with compacted nonexpansive fill, regardless of the amount of cut or fill required for site grading. Any additional fill required to reach the final subgrade elevation below the mat ribs or mat slab should be nonexpansive material as well. These measures should limit the magnitude of predicted floor slab movement to approximately 1 inch or less. Nonexpansive fill should be placed in controlled lifts not exceeding 8 inches in loose thickness and compacted to not less than 92 percent of maximum laboratory density as determined in accordance with ASTM D 1557. The upper 6 inches of existing subgrade exposed after excavation operations, or cleared prior to fill placement should be scarified, moistened, manipulated, and recompact to the same density required for nonexpansive fill materials. Due to high the groundwater table, vibration compaction should not be allowed. Groundwater levels should be controlled in cut sections of the site by appropriate ditch construction and pumping to achieve required compaction levels of in place soils and fills.

(4) Below-Grade Structures. The following information is provided for the design of all below-grade structures, if applicable. An at-rest lateral earth pressure coefficient ( $k_o$ ) of 0.7, an angle of internal friction ( $\phi$ ) of  $28^\circ$ , and a cohesion value ( $c$ ) of 100 psf shall be used. The backfill material should be assumed to have a moist unit weight of 125 pcf and all backfill should

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be nonexpansive or select material. An active earth pressure coefficient ( $k_a$ ) and a passive earth pressure coefficient ( $k_p$ ) of 0.36 and 2.77, respectively, can be used for excavations for below-grade structures.

(5) Drainage. Proper drainage is an important design consideration to ensure satisfactory long-term foundation performance. Exterior grading adjacent to the completed buildings should be sloped away from the structures a minimum of 5 percent for the first 10 feet. Runoff from the roofs should be adequately discharged a sufficient distance away from foundation edges. In no case shall water be allowed to pond adjacent to or beneath the buildings, both during and after construction.

(6) Care of Water. Drainage of ground and surface water from the project site continually throughout the construction contract is essential. The contractor will be required to protect the excavation and all constructed work throughout the life of the contract by means of ditches, berms, sumps with pumps, and any other means required to continually and effectively remove water from the site at all times. Ponding of water in the excavation is unacceptable at any time. These requirements shall be reflected in the specifications and structural notes.

(7) Mechanical Connections. All exterior mechanical connections shall be of the flexible type. Flexible connections should be capable of resisting a minimum of 1 inch of both vertical and horizontal movement. All condensate lines should drain away from foundation edges.

(8) Backfill Adjacent to Exterior Grade Beam Excavation. Use select clay backfill adjacent to exterior grade beam excavation to minimize water penetration to expansive subsoils.

(9) Material Testing Requirements. Testing shall be the responsibility of the contractor to ensure that the subgrade, fill, and backfill materials are properly compacted. To this end, the following frequencies of testing shall be included in the contract as a minimum:

- In-place density of the subgrade, fills, and backfills shall be performed for every 2000 square feet per lift in accordance with ASTM D 1556 or ASTM D 2922.

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- Optimum Moisture and Laboratory Maximum Density of nonexpansive fill and backfill shall be performed for every 500 cubic yards or when any change in material occurs.

(10) Foundation Material Definitions.

(a) Satisfactory Materials. Satisfactory materials include materials classified in ASTM D 2487 as GW, GM, GC, GP, SW, SP, SM, SC, CL, and CH and shall be free of trash, debris, roots or other organic matter, or stones larger than 3 inches in any dimension.

(b) Unsatisfactory Materials. Unsatisfactory materials include materials classified in ASTM D 2487 as Pt, OH, OL, ML, MH and any other materials not defined as satisfactory.

(c) Nonexpansive Soils. Nonexpansive soils for nonexpansive fill shall meet the requirements of the Louisiana Department of Transportation and Development Standard Specifications for Roads and Bridges for "Sand Clay Gravel", Part X, Section 1003.03(a). Satisfactory soils with a plasticity index of not less than 4 nor greater than 12 percent may be used as Nonexpansive soils.

(d) Select Soils. Select soils shall include all Satisfactory soils except CH materials. Select soils shall have a maximum liquid limit of 35 percent and a plasticity index of not less than 12 nor greater than 20 percent.

(e) Capillary Water Barrier. Capillary Water Barrier shall consist of clean, crushed, nonporous rock, crushed gravel, or uncrushed gravel. The maximum particle size shall be 1.5 inches and no more than 2 percent by weight shall pass the No. 4 sieve.

(f) Cohesionless and Cohesive Materials. Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.

(g) Degree of Compaction. Degree of compaction is a percentage of the

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maximum density obtained by the test procedure presented in ASTM D 1557.

The above material definitions and subgrade preparation requirements should be presented in *UFGS-31 00 00 EARTHWORK*.

b. Pavement Design Recommendations and Requirements. The minimum pavement sections presented below are based on criteria contained in *UFC 3-250-01FA*, *UFC 3-250-18FA*, and engineering judgment. The Design-Build Contractor is responsible for developing the final pavement designs. The Design-Build Contractor shall use the subsurface conditions and laboratory and in situ testing data provided in this report, as well as any supplemental subsurface investigations and testing performed by them or their associates, and any supplemental information regarding traffic loading conditions and requirements (beyond that provided herein) to develop the final pavement designs. The Design-Build Contractor shall use the United Facilities Criteria (UFCs) cited herein as well as Pavement-Transportation Computer Assisted Structural Engineering (PCASE) software (available at <https://transportation.wes.army.mil/triservice/pcase/> as a free download) to develop the final pavement designs. However, **it is required that the Design-Build Contractor's final pavement sections meet (or exceed) the minimum pavement sections specified herein.**

(1) Rigid Pavement. The following minimum rigid pavement sections are recommended for access drives, aprons in front of trash dumpster pads, and the building floor slab within the vehicle bays. The rigid pavement design considers a modulus of subgrade reaction of 100 pci for the raw subgrade when compacted to 90 percent of laboratory maximum density and a concrete flexural strength of 600 psi at 28 days.

(a) Access Drives. The design is based on equivalent loading of a P-23 Crash Truck making 262,500 passes over 25 years. This section shall also be used for apron(s) in front of vehicle bays.



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7" Portland Cement Concrete reinforced with No. 4 bars spaced 16 inches o.c.e.w.

6" Base Course (CBR=50) compacted to at least 95 percent of maximum laboratory density (ASTM D 1557)

6" Raw Subgrade compacted to at least 90 percent of maximum laboratory density (ASTM D 1557)

(b) Aprons in Front of Trash Dumpster Pads. The design is based on Category IVA Traffic and a Class F Street (Design Index = 4).

6" Portland Cement Concrete reinforced with No. 4 bars spaced 16 inches o.c.e.w.

6" Base Course (CBR=50) compacted to at least 95 percent of maximum laboratory density (ASTM D 1557)

6" Raw Subgrade compacted to at least 90 percent of maximum laboratory density (ASTM D 1557)

Reinforcement for odd-shaped slabs, joint design, joint spacing, and other details should be in accordance with the latest edition of the *SWD-AEIM* and *UFC 3-250-01FA*, where applicable. The reinforcement bars should be placed a minimum of 1.5 inches clear distance from the surface of the pavement.

(c) Floor Slab within Vehicle Bays. The following pavement section is based on equivalent loading of a P-23 Crash Truck making 262,500 passes over 25 years, an effective modulus of subgrade reaction equal to 200 pci (upgraded due to nonexpansive fill), and a concrete flexural strength of 600 psi at 28 days. The vehicular floor slab shall have a minimum thickness of 6.5 inches and shall be reinforced with No. 4 bars spaced 12 inches on-center and in each direction. Subgrade preparation below the floor slab should be in accordance with the requirements presented in this report.

**The design of the vehicular floor slab supported on-grade is based upon vehicle-**

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**imposed loads only, without regard for stresses caused by stationary live loads and/or other loading conditions, and shall be upgraded, as necessary, to account for these additional loading conditions.**

(2) Flexible Pavement. The following pavement sections are recommended for the privately-owned vehicle (POV) parking area, asphalt overlays for existing medium- to heavy-duty flexible pavement structures, and the turning lane from Louisiana Avenue to Mississippi Avenue. A minimum pavement section is also provided for Service Drives which shall include those portions of the POV parking area(s) which may experience larger, multi-axle truck traffic (e.g., to access trash dumpsters, etc.) The flexible pavement designs consider a CBR value of 4 percent for the raw subgrade when compacted to 90 percent of laboratory maximum density.

(a) POV Parking Area. The design is based on Category II Traffic and a Class E Street (Design Index = 2).

1.5" Hot-Mix Surface Course

7" Base Course (CBR=50) compacted to at least 100 percent of maximum laboratory density (ASTM D 1557)

6" Base Course (CBR=50) compacted to at least 95 percent of maximum laboratory density (ASTM D 1557)

6" Raw Subgrade compacted to at least 90 percent of maximum laboratory density (ASTM D 1557)

(b) Asphalt Overlays for Existing Medium- to Heavy-Duty Flexible Pavement Structures. The design is based on Category IVA Traffic and a Class D Street (Design Index = 5). The overlay shall consist of 2.5" Hot-Mix Surface Course constructed over the existing flexible pavement structure.

(c) Turning Lane from Louisiana Avenue to Mississippi Avenue. The design is based on Category VII Traffic making up to 10 passes per day (Design Index = 8).

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4.5" Hot-Mix Surface Course

8" Base Course (CBR=50) compacted to at least 100 percent of maximum laboratory density (ASTM D 1557)

8" Base Course (CBR=50) compacted to at least 95 percent of maximum laboratory density (ASTM D 1557)

6" Base Course (CBR=50) compacted to at least 95 percent of maximum laboratory density (ASTM D 1557)

6" Raw Subgrade compacted to at least 90 percent of maximum laboratory density (ASTM D 1557)

(d) Service Drive(s). This minimum pavement section shall be used in lieu of the section specified in Paragraph 6.b.(2)(a) for those sections of POV parking area(s) which may experience large multi-axle truck traffic (e.g., trash dumpster trucks). The design is based on Category IVA Traffic and a Class F Street (Design Index = 4).

3" Hot-Mix Surface Course

8" Base Course (CBR=50) compacted to at least 100 percent of maximum laboratory density (ASTM D 1557)

8" Base Course (CBR=50) compacted to at least 95 percent of maximum laboratory density (ASTM D 1557)

6" Raw Subgrade compacted to at least 90 percent of maximum laboratory density (ASTM D 1557)

The following note should be incorporated as part of the pavement details shown on the contract drawings.

***1. "The moisture content shall be at least 1 percent above optimum during compaction of the raw subgrade."***

***2. "The upper 6 inches of raw subgrade materials directly underlying the base course layer(s) shall consist of satisfactory materials, excluding materials that classify as CH materials. If the upper 6 inches of raw subgrade directly underlying the base***

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*course layer(s) are CH materials, the upper 6 inches of these materials shall be removed and replaced with satisfactory materials (excluding CH materials), and compacted to the density specified for raw subgrade underlying pavements."*

(3) Pavement Material Definitions.

(a) High Stability Hot-Mix Surface Course. Aggregates and asphaltic materials shall conform to the requirements of the Louisiana Department of Transportation and Development Standard Specifications for Roads and Bridges for "Asphaltic Concrete Mixtures", Part V. Asphaltic material for the paving mixture should be asphaltic cement, viscosity grade AC-30 or PG-64-22. Edit guide specification ***UFGS-32 12 16 HOT-MIX ASPHALT (HMA) FOR ROADS*** to the above requirements.

(b) Prime Coat and Tack Coat. Asphaltic material for the prime coat shall be cut-back asphalt, grade MC-30, conforming to the requirements of Louisiana Department of Transportation and Development Standard Specifications for Roads and Bridges for "Asphaltic Materials", Part X, Section 1002. Prime coat should be applied to the surface of the base course. Asphaltic material for the tack coat shall be cut-back asphalt, grade RC-250, or emulsified asphalt, grade SS-1, conforming to the requirements of Louisiana Department of Transportation and Development Standard Specifications for Roads and Bridges for "Asphaltic Materials", Part X, Section 1002. Tack coat should be applied to all surfaces that contact new asphalt pavement. Edit guide specification ***UFGS-32 12 10 BITUMINOUS TACK AND PRIME COATS*** to the above requirements.

(c) Portland Cement Concrete. The material shall conform to the requirements of ***UFGS-32 13 11 CONCRETE PAVEMENT FOR AIRFIELDS AND OTHER HEAVY-DUTY PAVEMENT***. The maximum nominal size coarse aggregate shall be 1.5 inches, and the mixture shall be designed to attain a flexural strength of 600 psi at 28 days.

(d) Base Course. Aggregates shall conform to the requirements of ***UFGS-***

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**32 11 23 AGGREGATE BASE COURSE**, and shall have a CBR value of 50 percent. The gradation for the material should conform to the requirements of the Louisiana Department of Transportation and Development Standard Specifications for Roads and Bridges for “Sand Clay Gravel”, Part X, Section 1003.03(a).

(e) Raw Subgrade. The material shall conform to the requirements of **UFGS-31 00 00 EARTHWORK**.

(4) Vehicular Pavement Material Testing Requirements. Testing shall be the responsibility of the contractor to ensure that the subgrade, base course, hot-mix surface course, and Portland cement concrete are properly constructed. To this end, the following testing requirements shall be included in the contract specifications as a minimum:

- In-place density testing of the subgrade and base course shall be performed, at a minimum, every 600 square yards per lift in accordance with ASTM D 1556 and ASTM D 2922. ASTM D 1556 shall be used as a check at least once per lift for each 3,000 square yards of completed subgrade and base course.
- Before starting work, at least one sample of base course material shall be tested in accordance with ASTM C 136. After the initial test, a minimum of one sieve analysis (ASTM C 136 and ASTM D 422) shall be performed for each 1,000 tons of base course placed, with a minimum of one analysis performed for each day’s run until the course is completed. One liquid limit and plasticity index shall be performed for each sieve analysis per ASTM D 4318
- Wear tests shall be performed in accordance with ASTM C 131. A minimum of one test per base course material source shall be run.
- Thickness of the base course shall be measured for each 600 square yards of material placed. Compacted thickness of the base course shall be as presented in this report and the completed section shall be within 3/8-inch of the thickness presented.
- Hot Bin gradations for the asphalt wearing course shall be tested in accordance with ASTM C 136 and ASTM C 117. A minimum of one test shall be conducted. Marshall specimens shall be taken in accordance with methods described in AI MS-2. At least two sets of specimens shall be taken. Asphalt extractions shall be performed in accordance with ASTM D 2172, Method A or B. At least one asphalt extraction shall be conducted. Field density tests shall be conducted in accordance with ASTM D 2950. One test shall be conducted for each 300 square yards of pavement placed. The mat density shall be 97.5 to 100.5 percent and the joint density shall be 95.5 to 100.5 percent of the density obtained from laboratory-

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compacted specimens. Thickness measurements shall be taken at a minimum of one measurement for each 1,000 square yards of pavement placed.

- The Job Mix Formula for the bituminous mixture shall be furnished to the Contraction Officer for approval. The formula will indicate the percentage of each stockpile and mineral filler, the percentage of each size aggregate, the percentage of bitumen, and the temperature of the completed mixture when discharged from the mixer. The Contractor shall file with the Contracting Officer certified delivery tickets for all aggregates and bituminous materials actually used in construction. The finished mixture shall be designed using procedures contained in AI MS-2 and the criteria shown below.

<u>Test Property</u>	<u>50 Blows</u>
Stability (minimum), lbs	1,000
Flow (maximum), 1/100-inch	8-18
Air Voids, percent	3% to 5%
Percent Voids in mineral aggregate	14
TSR, minimum percent	75

- The contractor shall be responsible for the development of the mixture proportion study for cementitious materials and chemical admixtures. The concrete mix design shall include a statement giving the maximum nominal coarse aggregate size and the proportions of all ingredients that will be used in the manufacture of concrete at least 60 days prior to commencing concrete operations. Trial design batches, mixture proportioning studies, and testing requirements shall be the responsibility of the Contractor. Strength requirements shall be based on flexural strength. Trial mixtures having proportions, slumps, and air content suitable for the work shall be based on methodology described in ACI 211.1, modified as necessary to accommodate flexural strength. The maximum water-cementitious material ratio is 0.45. Coarse and fine aggregates shall have a satisfactory service record of at least 5 years successful service in three paving projects, or if a new source is used, shall meet the requirements when tested for resistance to freezing and thawing. Coarse and fine aggregates not having a satisfactory demonstrable service record shall have a durability factor of 50 when subjected to freezing and thawing in concrete in accordance with COE CRD-C 114 (Test Method for Soundness of Aggregates by Freezing and Thawing of Concrete Specimens).
- Smoothness measurements shall be taken in successive positions parallel to the pavement (flexible and rigid) centerline with a 12-foot straightedge. Measurements shall be taken perpendicular to the pavement (flexible and rigid) centerline at 15-foot intervals. Surface smoothness shall not exceed 3/8-inch.

**c. Requirements for the Design-Build Contractor's Foundation and Pavement Design**

**Analysis.** The successful proposer shall provide a Foundation and Pavement Design Analysis after

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contract award. *The geotechnical firm responsible for the geotechnical design shall have demonstrated successful performance in design of at least five (5) projects of similar type and scope in expansive soil environments in Louisiana.* The Foundation and Pavement Design Analysis (Report) shall include a description of the project, including a discussion of any unusual features of the project, a discussion for each structure that requires a foundation system, and a discussion of each pavement type. All calculations in support of bearing, settlement, heave, and structural deflections shall be included in or attached to the report.

(1) **Foundation System.** *The foundation system selected for the Emergency Service Center shall be limited to a reinforced concrete ribbed mat slab or a reinforced concrete flat mat slab foundation system, designed and constructed in accordance with the requirements, recommendations, and design parameters provided in this report.*

(2) **Subgrade Preparation and Fill Requirements.** *The Design-Build Contractor shall comply with the floor slab system, subgrade preparation, and fill requirements specified in this report. The mat slab foundations will, by design, be supported on-grade. Excavation/removal of existing soil, compaction requirements for the raw subgrade, fill, and backfill materials, and foundation and pavement material definitions shall be as specified herein. Compaction shall be in accordance with the modified Proctor method (ASTM D 1557).*

(3) **Pavement Sections.** The Design-Build Contractor shall provide separate subparagraphs for each pavement structure included in the project, *using the pavement sections provided in this report as minimum sections.* The Design-Build Contractor shall use the UFCs cited herein and PCASE pavement design software to develop the final pavement designs, and shall present PCASE design output data tables in their report documentation for review by the Government. Each pavement design shall include as a minimum the following items: traffic types, road classifications and design indexes; subgrade strength values (CBR and modulus of subgrade reaction values for the specified compactive effort); pavement material thicknesses and

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compaction requirements; and concrete flexural strength for designated time frame.

(4) Exhibits to be Included in the Design-Build Contractor's Foundation and Pavement Design Analysis. The following exhibits shall be included in the Design-Build contractor's Foundation and Pavement Design Analysis. The Design-Build contractor may use the information provided in this report to partially satisfy these requirements, but shall supplement the information provided herein with additional subsurface drilling and testing, as described in the first paragraph of Section 5 of this report. Required exhibits to be included with the Design-Build contractor's Foundation and Pavement Design Analysis include:

- Site Plan with Boring Locations and Legend;
- Boring Logs;
- Plasticity Chart;
- Standard Penetration Tests versus Depth of Boring (if applicable);
- Moisture Content versus Depth (Chart);
- Moisture Content-Liquid Limit-Plastic Limit versus Depth (Chart);
- Strength Tests Results versus Depth (Chart);
- Tabulation of Laboratory Test Results (to include Boring Number, Sample Number, Depth, Laboratory Classification, Visual Descriptions, Grain Size Analysis (%Gravel, %Sand, %Fines), LL, PL, PI, MC, Unit Weight, and Strength Test Data;
- Consolidation-Expansion Tests/Swell Pressure Tests (if applicable).



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**References:**

- TEAM Consultants, Incorporated Report No. 082032
- UFC 3-220-03FA – Soils and Geology Procedures for Foundation Design of Buildings and Other Structures (Except Hydraulic Structures)
- UFC 3-220-07 – Foundations in Expansive Soils
- CESWD-ED-TS/G Criteria Letter, dated 29 January 1988 – Design Criteria for Ribbed Mat Foundations
- SWDED-G Criteria Letter, dated 16 April 1987 – Criteria for Developing Geotechnical Design Parameters for SWD Ribbed Mat Design Methodology
- UFC 3-250-01FA – Pavement Design for Roads, Streets, Walks, and Open Storage Areas
- UFC 3-250-18FA – General Provisions and Geometric Design For Roads, Streets, Walks, and Open Storage Areas
- Louisiana Department of Transportation and Development Standard Specifications for Roads and Bridges
- SWD-AEIM Architectural-Engineering Manual
- UFGS Guide Specifications For Construction

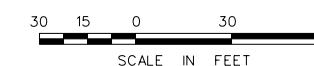
**FORT WORTH DISTRICT  
JULY 2008**

## **APPENDIX A**

### **BORING LOCATIONS & LOGS OF BORINGS**



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Friday, September 07, 2012

PN:

U.S. ARMY ENGINEER DISTRICT,  
CORPS OF ENGINEERS  
FORT WORTH, TEXAS

Designed by: M. BERNHARDT	Date: 30 JUN 08	Rev.
Drawn by: M. BERNHARDT	Sol No.	
Reviewed by: K. K. MCLESKEY	Contr No.	
Submitted by: LESLIE L. PERAIN, P.E. CIVIL ENGINEER Plot date: \$560.05\$ File name:		

[illegible]

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[illegible]

DRILLING LOG

DIVISION

SOUTHWESTERN

INSTALLATION

FORT WORTH

SHEET

1

OF 1 SHEETS

1. PROJECT

EMERGENCY SERVICE CENTER

2. LOCATION (Coordinates or Station)

FORT POLK, LOUISIANA

3. DRILLING AGENCY

TETRA TECH, INC.

4. HOLE NO. (As shown on drawing title and file number)

8A2S-ESC-01

5. NAME OF DRILLER

JOHN BECHTEL

6. DIRECTION OF HOLE

☒ VERTICAL ☐ INCLINED \_\_\_\_\_ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN

8. DEPTH DRILLED INTO ROCK

9. TOTAL DEPTH OF HOLE

60.0'

10. SIZE AND TYPE OF BIT

MSL

11. DATUM FOR ELEVATION SHOWN (TBM or MSL)

MSL

12. MANUFACTURER'S DESIGNATION OF DRILL

MOBILE B-57

13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN

25

DISTURBED

25

UNDISTURBED

6

14. TOTAL NUMBER CORE BOXES

0

15. ELEVATION GROUND WATER

311.6'

16. DATE HOLE

STARTED

4-10-08

COMPLETED

4-10-08

17. ELEVATION TOP OF HOLE

334.6'

18. TOTAL CORE RECOVERY FOR BORING

X

19. SIGNATURE OF INSPECTOR

MICHAEL K. BRANUM

2. MOISTURE CONTENT

DEPTH (FT.)

LEGEND

CLASSIFICATION OF MATERIALS (Description)

2. CORE RECOVERY

BOX OR SAMPLE NO.

REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)

0.0' TO 32.3'

SAND

0.0' TO 3.7'

MOIST, TAN, SILTY

3.7 TO 16.5'

MOIST, BROWN AND TAN, CLAYEY

16.5 TO 32.3'

FINE, MOIST, BROWN AND TAN WITH PURPLE SEAMS, 4" PURPLE CLAY LAYER AT 22.5'

32.3 TO 60.0'

CLAY

HIGHLY PLASTIC, SOFT TO MEDIUM, MOIST, TAN AND PURPLE TO TAN AND GRAY

ST1 - 34.0 TO 36.0'

ST2 - 38.0 TO 40.0'

ST3 - 43.0 TO 45.0'

ST4 - 48.0 TO 50.0'

ST5 - 53.0 TO 55.0'

ST6 - 58.0 TO 60.0'

JAR SAMPLES

A. 0.0 TO 5.0'

B. 5.0 TO 10.0'

C. 10.0 TO 15.0'

D. 15.0 TO 20.0'

E. 20.0 TO 25.0'

F. 25.0 TO 30.0'

G. 30.0 TO 35.0'

H. 35.0 TO 40.0'

I. 40.0 TO 45.0'

J. 45.0 TO 50.0'

K. 50.0 TO 55.0'

L. 55.0 TO 60.0'

WATER LEVEL

WATER WAS ENCOUNTERED AT A DEPTH OF 28.5' DURING DRILLING. 24 HOUR CHECK = 23.0' B.G.S.

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE.

MAR 71

PROJECT

EMERGENCY SERVICE CTR.

HOLE NO.

8A2S-ESC-01

DRILLING LOG

DIVISION

SOUTHWESTERN

INSTALLATION

FORT WORTH

SHEET

1

OF 1 SHEETS

1. PROJECT

EMERGENCY SERVICE CENTER

2. LOCATION (Coordinates or Station)

FORT POLK, LOUISIANA

3. DRILLING AGENCY

TETRA TECH, INC.

4. HOLE NO. (As shown on drawing title and file number)

8A2S-ESC-02

5. NAME OF DRILLER

JOHN BECHTEL

6. DIRECTION OF HOLE

☒ VERTICAL ☐ INCLINED \_\_\_\_\_ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN

8. DEPTH DRILLED INTO ROCK

9. TOTAL DEPTH OF HOLE

60.0'

10. SIZE AND TYPE OF BIT

MSL

11. DATUM FOR ELEVATION SHOWN (TBM or MSL)

MSL

12. MANUFACTURER'S DESIGNATION OF DRILL

MOBILE B-57

13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN

26

DISTURBED

26

UNDISTURBED

5

14. TOTAL NUMBER CORE BOXES

0

15. ELEVATION GROUND WATER

313.9'

16. DATE HOLE

STARTED

4-10-08

COMPLETED

4-10-08

17. ELEVATION TOP OF HOLE

340.1'

18. TOTAL CORE RECOVERY FOR BORING

X

19. SIGNATURE OF INSPECTOR

MICHAEL K. BRANUM

2. MOISTURE CONTENT

DEPTH (FT.)

LEGEND

CLASSIFICATION OF MATERIALS (Description)

2. CORE RECOVERY

BOX OR SAMPLE NO.

REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)

0.0' TO 37.1'

SAND

0.0 TO 7.5'

LOOSE, FINE, MOIST, REDDISH BROWN, SILTY

7.5 TO 12.5'

LOOSE, FINE, MOIST, REDDISH BROWN, CLAYEY

12.5 TO 17.5'

LOOSE, REDDISH BROWN TO TAN, MOIST, SILTY

17.5 TO 20.0'

MEDIUM DENSE, LIGHT TAN, SILTY

20.0 TO 22.5'

DENSE, TAN AND GRAY, SILTY, WITH CLAY

22.5 TO 25.0'

DENSE, REDDISH BROWN, CLAYEY

25.0 TO 27.5'

MEDIUM DENSE, LIGHT TAN WITH SILT, DAMP

27.5 TO 30.0'

MEDIUM DENSE, LIGHT TAN, DAMP

30.0 TO 35.0'

MEDIUM DENSE, LIGHT TAN, MOIST WITH SILT

35.0 TO 37.1'

MEDIUM DENSE, TAN, SILTY, MOIST

37.1 TO 60.0'

CLAY

HIGHLY PLASTIC, STIFF, TAN AND LIGHT GRAY, MOIST

ST1 - 38.0 TO 40.0'

ST2 - 43.0 TO 45.0'

ST3 - 48.0 TO 50.0'

ST4 - 53.0 TO 55.0'

ST5 - 58.0 TO 60.0'

JAR SAMPLES

A. 0.0 TO 5.0'

B. 5.0 TO 10.0'

C. 10.0 TO 15.0'

D. 15.0 TO 20.0'

E. 20.0 TO 25.0'

F. 25.0 TO 30.0'

G. 30.0 TO 35.0'

H. 35.0 TO 40.0'

I. 40.0 TO 45.0'

J. 45.0 TO 50.0'

K. 50.0 TO 55.0'

L. 55.0 TO 60.0'

WATER LEVEL

WATER WAS ENCOUNTERED AT A DEPTH OF 32.0' B.G.S. DURING DRILLING. 24 HOUR CHECK = 26.5' B.G.S.

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE.

MAR 71

PROJECT

EMERGENCY SERVICE CTR.

HOLE NO.

8A2S-ESC-02

DRILLING LOG

DIVISION

SOUTHWESTERN

INSTALLATION

FORT WORTH

SHEET

1

OF 1 SHEETS

1. PROJECT

EMERGENCY SERVICE CENTER

2. LOCATION (Coordinates or Station)

FORT POLK, LOUISIANA

3. DRILLING AGENCY

TETRA TECH, INC.

4. HOLE NO. (As shown on drawing title and file number)

8A2S-ESC-03

5. NAME OF DRILLER

JOHN BECHTEL

6. DIRECTION OF HOLE

☒ VERTICAL ☐ INCLINED \_\_\_\_\_ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN

8. DEPTH DRILLED INTO ROCK

9. TOTAL DEPTH OF HOLE

60.0'

10. SIZE AND TYPE OF BIT

MSL

11. DATUM FOR ELEVATION SHOWN (TBM or MSL)

MSL

12. MANUFACTURER'S DESIGNATION OF DRILL

MOBILE B-57

13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN

27

DISTURBED

27

UNDISTURBED

4

14. TOTAL NUMBER CORE BOXES

0

15. ELEVATION GROUND WATER

315.3'

16. DATE HOLE

STARTED

4-09-08

COMPLETED

4-09-08

17. ELEVATION TOP OF HOLE

337.9'

18. TOTAL CORE RECOVERY FOR BORING

X

19. SIGNATURE OF INSPECTOR

MICHAEL K. BRANUM

2. MOISTURE CONTENT

DEPTH (FT.)

LEGEND

CLASSIFICATION OF MATERIALS (Description)

2. CORE RECOVERY

BOX OR SAMPLE NO.

REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)

0.0' TO 35.1'

SAND

0.0 TO 7.5'

FINE, RED, MOIST, CLAYEY: LOOSE

7.5 TO 12.5'

LOOSE TO MEDIUM DENSE, FINE, BROWN TO BROWN AND TAN, MOIST

12.5 TO 20.0'

DENSE, FINE, TAN AND WHITE, MOIST, CLAYEY

20.0 TO 27.5'

MEDIUM DENSE, BROWN AND TAN, MOIST, PURPLE SEAMS

27.5 TO 30.0'

DENSE, FINE, TAN, MOIST

30.0 TO 31.3'

PURPLE CLAY SEAM, MOIST, MEDIUM

31.3 TO 35.1'

TAN WITH PURPLE SEAMS, WET

35.1 TO 60.0'

CLAY

HIGHLY PLASTIC, SOFT TO STIFF, TAN AND GRAY, MOIST

ST1 - 38.0 TO 40.0'

ST2 - 43.0 TO 45.0'

ST3 - 48.0 TO 50.0'

ST4 - 53.0 TO 55.0'

ST5 - 58.0 TO 60.0'

JAR SAMPLES

A. 0.0 TO 5.0'

B. 5.0 TO 10.0'

C. 10.0 TO 15.0'

D. 15.0 TO 20.0'

E. 20.0 TO 25.0'

F. 25.0 TO 30.0'

G. 30.0 TO 35.0'

H. 35.0 TO 40.0'

I. 40.0 TO 45.0'

J. 45.0 TO 50.0'

K. 50.0 TO 55.0'

L. 55.0 TO 60.0'

WATER LEVEL

WATER WAS ENCOUNTERED AT A DEPTH OF 30.0' B.G.S. DURING DRILLING. 24 HOUR CHECK = 22.6' B.G.S.

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE.

MAR 71

PROJECT

EMERGENCY SERVICE CTR.

HOLE NO.

8A2S-ESC-03

DRILLING LOG

DIVISION

SOUTHWESTERN

INSTALLATION

FORT WORTH

SHEET

1

OF 1 SHEETS

1. PROJECT

EMERGENCY SERVICE CENTER

2. LOCATION (Coordinates or Station)

FORT POLK, LOUISIANA

3. DRILLING AGENCY

TETRA TECH, INC.

4. HOLE NO. (As shown on drawing title and file number)

8A2S-ESC-04

5. NAME OF DRILLER

JOHN BECHTEL

6. DIRECTION OF HOLE

☒ VERTICAL ☐ INCLINED \_\_\_\_\_ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN

8. DEPTH DRILLED INTO ROCK

9. TOTAL DEPTH OF HOLE

60.0'

10. SIZE AND TYPE OF BIT

MSL

11. DATUM FOR ELEVATION SHOWN (TBM or MSL)

MSL

12. MANUFACTURER'S DESIGNATION OF DRILL

MOBILE B-57

13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN

22

DISTURBED

22

UNDISTURBED

7

14. TOTAL NUMBER CORE BOXES

0

15. ELEVATION GROUND WATER

314.9'

16. DATE HOLE

STARTED

4-09-08

COMPLETED

4-09-08

17. ELEVATION TOP OF HOLE

338.1'

18. TOTAL CORE RECOVERY FOR BORING

X

19. SIGNATURE OF INSPECTOR

MICHAEL K. BRANUM

2. MOISTURE CONTENT

DEPTH (FT.)

LEGEND

CLASSIFICATION OF MATERIALS (Description)

2. CORE RECOVERY

BOX OR SAMPLE NO.

REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)

0.0' TO 32.5'

SAND

0.0 TO 5.0'

LOOSE, FINE, MOIST, REDDISH BROWN

5.0 TO 17.5'

MEDIUM DENSE, REDDISH BROWN, MOIST, CLAYEY

17.5 TO 20.0'

DENSE REDDISH BROWN AND TAN, SILTY WITH CLAY, MOIST

20.0 TO 22.5'

DENSE, RED, TAN AND GRAY, SILTY

22.5 TO 25.0'

MEDIUM DENSE, RED, TAN AND GRAY, SILTY

25.0 TO 27.5'

MEDIUM DENSE, TAN AND GRAY, DAMP, CLAYEY

27.5 TO 30.0'

LOOSE, LIGHT TAN WITH SILT

30.0 TO 32.5'

LOOSE, RED, BROWN, TAN, SILTY, WET

32.5 TO 60.0'

CLAY

HIGHLY PLASTIC, STIFF, TAN AND LIGHT GRAY, MOIST

ST1 - 8.0 TO 10.0'

ST2 - 13.0 TO 15.0'

ST3 - 38.0 TO 40.0'

ST4 - 43.0 TO 45.0'

ST5 - 48.0 TO 50.0'

ST6 - 53.0 TO 55.0'

ST7 - 58.0 TO 60.0'

RESISTIVITY

2 X 3.14 X 76.2 cm X

51.1 ohm =

24.466 ohm-cm

JAR SAMPLES

A. 0.0 TO 5.0'

B. 5.0 TO 10.0'

C. 10.0 TO 15.0'

D. 15.0 TO 20.0'

E. 20.0 TO 25.0'

F. 25.0 TO 30.0'

G. 30.0 TO 35.0'

H. 35.0 TO 40.0'

I. 40.0 TO 45.0'

J. 45.0 TO 50.0'

K. 50.0 TO 55.0'

L. 55.0 TO 60.0'

WATER LEVEL

WATER WAS ENCOUNTERED AT A DEPTH OF 29.0' B.G.S. DURING DRILLING. 24 HOUR CHECK = 23.2' B.G.S.

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE.

MAR 71

PROJECT

EMERGENCY SERVICE CTR.

HOLE NO.

8A2S-ESC-04

NOTES:

1. USE THIS SHEET FOR BORING LOGS ONLY.

2. MOISTURE CONTENT, WHERE SHOWN, IS EXPRESSED AS PERCENT DRY WEIGHT AT TIME OF LABORATORY CLASSIFICATION.

3. LEGEND SHOWS OVERBURDEN MATERIALS CLASSIFIED ACCORDING TO ASTM D 2487 AND ASTM D 2488.

4. DESCRIPTION OF OVERBURDEN MATERIALS CHANGED TO CORRESPOND WITH LABORATORY CLASSIFICATION AS NECESSARY.

U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS

ENGINEERING/ CONSTRUCTION DIVISION

ENG. SERVICE BRANCH

DESIGNED BY: M. BERNHARDT

DRAWN BY: M. BERNHARDT

REVIEWED BY: K. MCLESKEY

SUBMITTED BY: LESLIE L. PERRIN, P.E.

DATE: 25 JUN 08

SHEET NO.:

CONF. NO.:

POST DATE: 8/20/08

POST SCALE:

Fort Polk, Louisiana

Emergency Service Center

PN:

LOGS OF BORINGS 1 OF 3

Sheet reference number: B201

DESIGN FILE: \$\$\$cadd file name\$\$\$

CONTR. NO.:

Drilling Log		Division		Installation		Hole No. 10A25-ESC	
Southwestern		Fort Worth		Sheet 1		Of 1 Sheets	
1. PROJECT EMERGENCY SERVICE CENTER				10. SIZE AND TYPE OF BIT x			
2. LOCATION (Coordinates or Station) FORT POLK, LOUISIANA				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY TETRA TECH, INC.				12. MANUFACTURER'S DESIGNATION OF DRILL MOBILE B-57			
4. HOLE NO. (As shown on drawing title and file number) 10A25-ESC-08				13. TOTAL NO. OF OVER- BURDEN SAMPLES TAKEN		UNDISTURBED 0	
5. NAME OF DRILLER JOHN BECHTEL				14. TOTAL NUMBER CORE BOXES		0	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER		DRY	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 4-11-08	
8. DEPTH DRILLED INTO ROCK				17. ELEVATION TOP OF HOLE		330.7'	
9. TOTAL DEPTH OF HOLE 10.0'				18. TOTAL CORE RECOVERY FOR BORING		x	
19. SIGNATURE OF INSPECTOR MICHAEL K. BRANIM				REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)			
Z MOISTURE CONTENT a		DEPTH (FT.) b		LEGEND c		CLASSIFICATION OF MATERIALS (Description) d	
						Z CORE RECOV- ERY e	
						BOX OR SAMPLE NO. f	
						A	
						B	
						STD. PENETRATION TESTS	
						DEPTH BLOW STARTED COUNTS	
						0.0' 3-3-4	
						2.5' 1-2-1	
						5.0' 1-1-2	
						7.5' 1-2-4	
						10.0' 4-5-7	
						JAR SAMPLES	
						A. 0.0 TO 5.0'	
						B. 5.0 TO 10.0'	
						WATER LEVEL	
						NO WATER ENCOUNTERED DURING DRILLING.	

Sheet  
reference  
number:  
B202

Friday, September 07, 2012

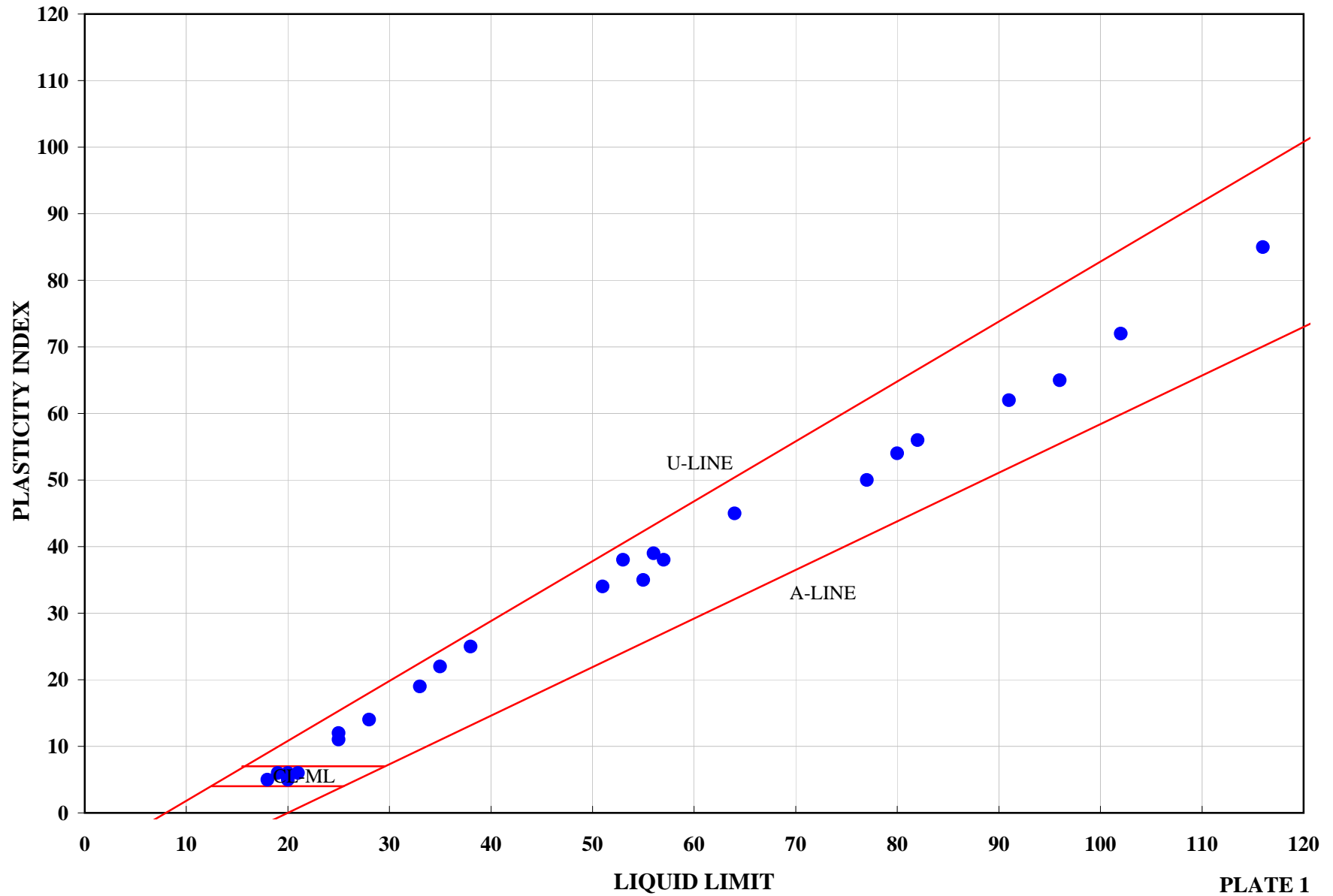
US Army Corps  
of Engineers  
Fort Worth District

Friday, September 07, 2012

## **APPENDIX B**

### **LABORATORY TESTING DATA PLOTS**

## EMERGENCY SERVICE CENTER PLASTICITY CHART





# EMERGENCY SERVICE CENTER MOISTURE CONTENT VS DEPTH

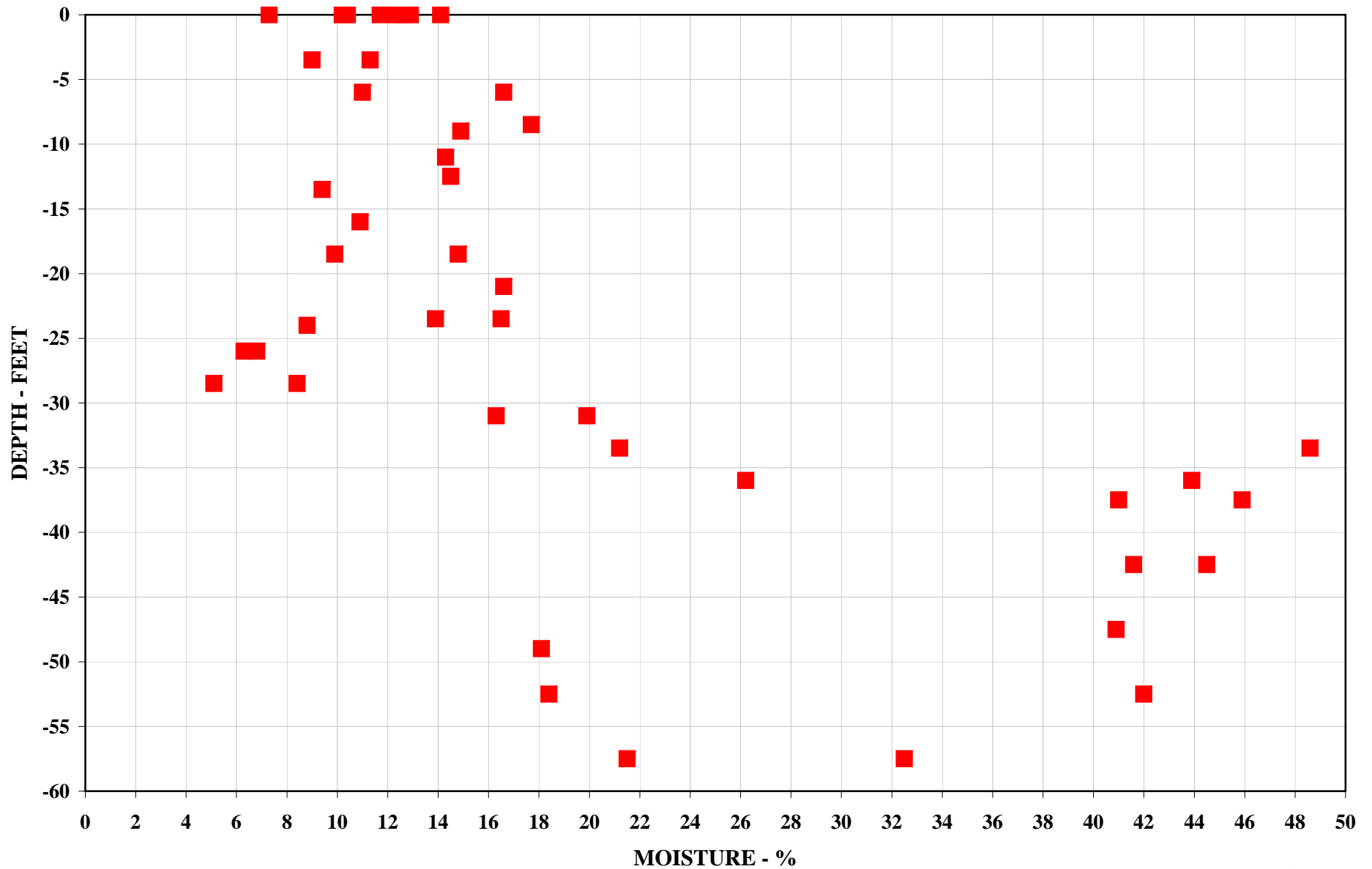


PLATE 2

EMERGENCY SERVICE CENTER  
ATTERBERG LIMITS VS DEPTH

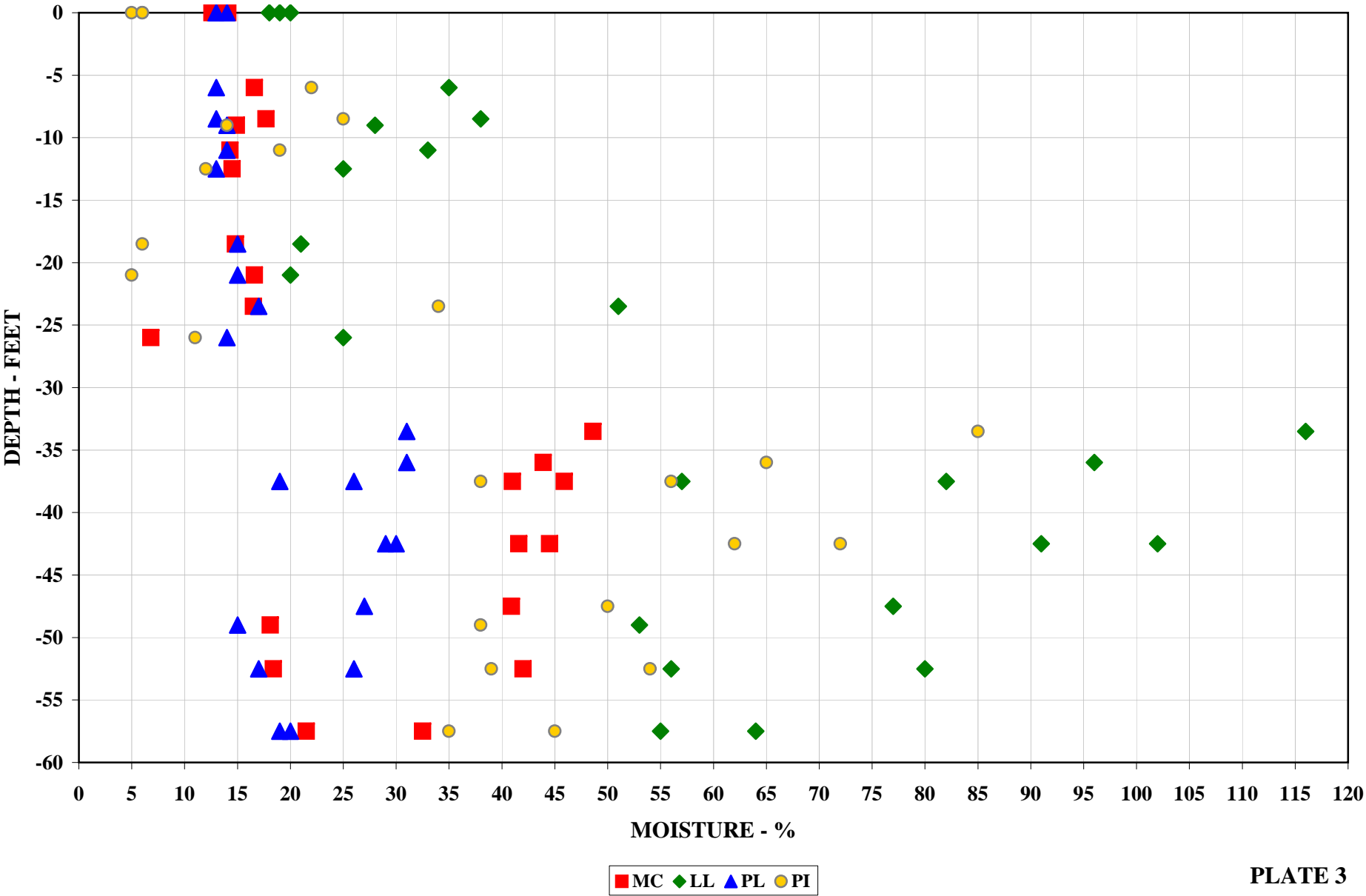
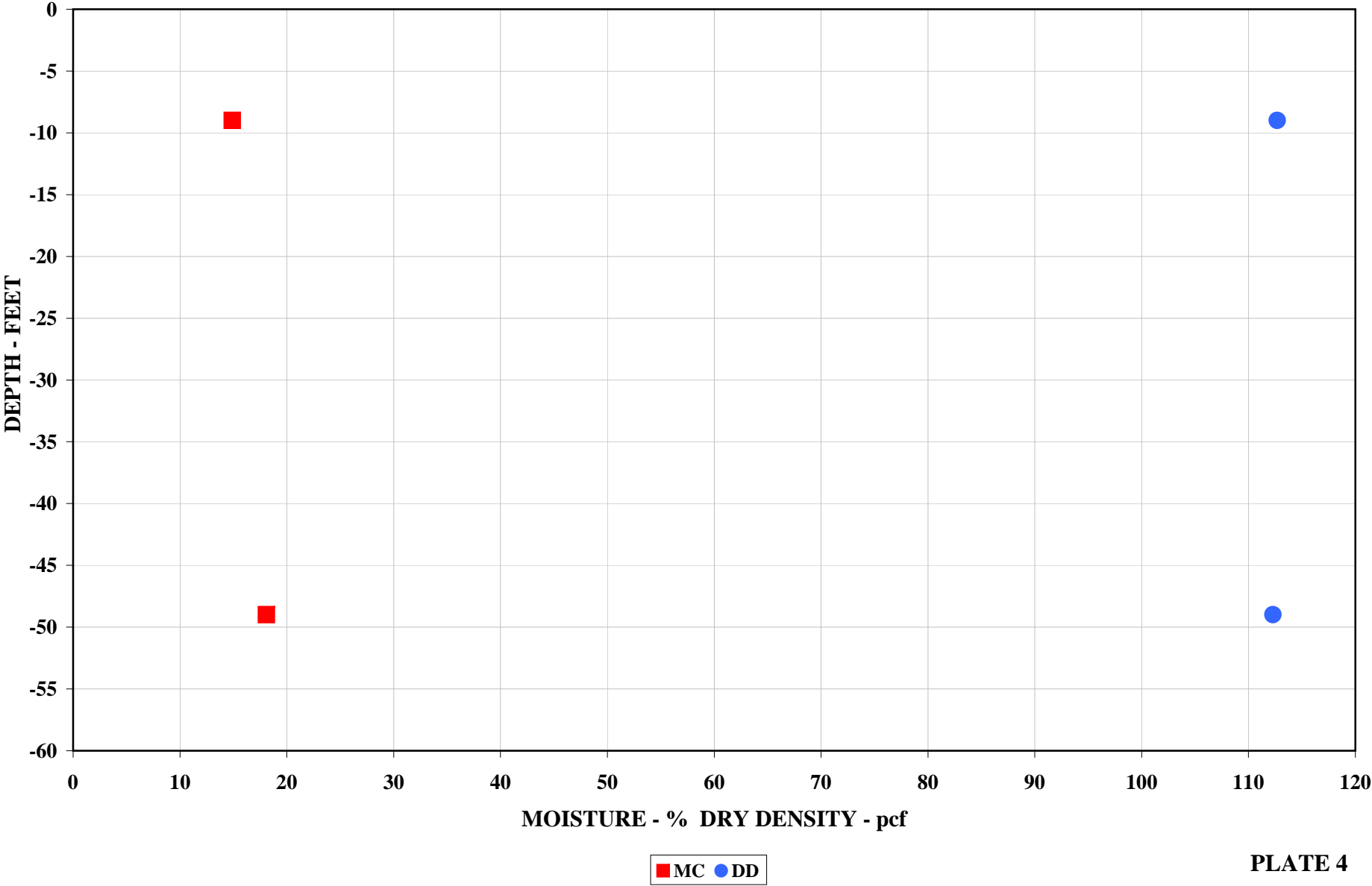


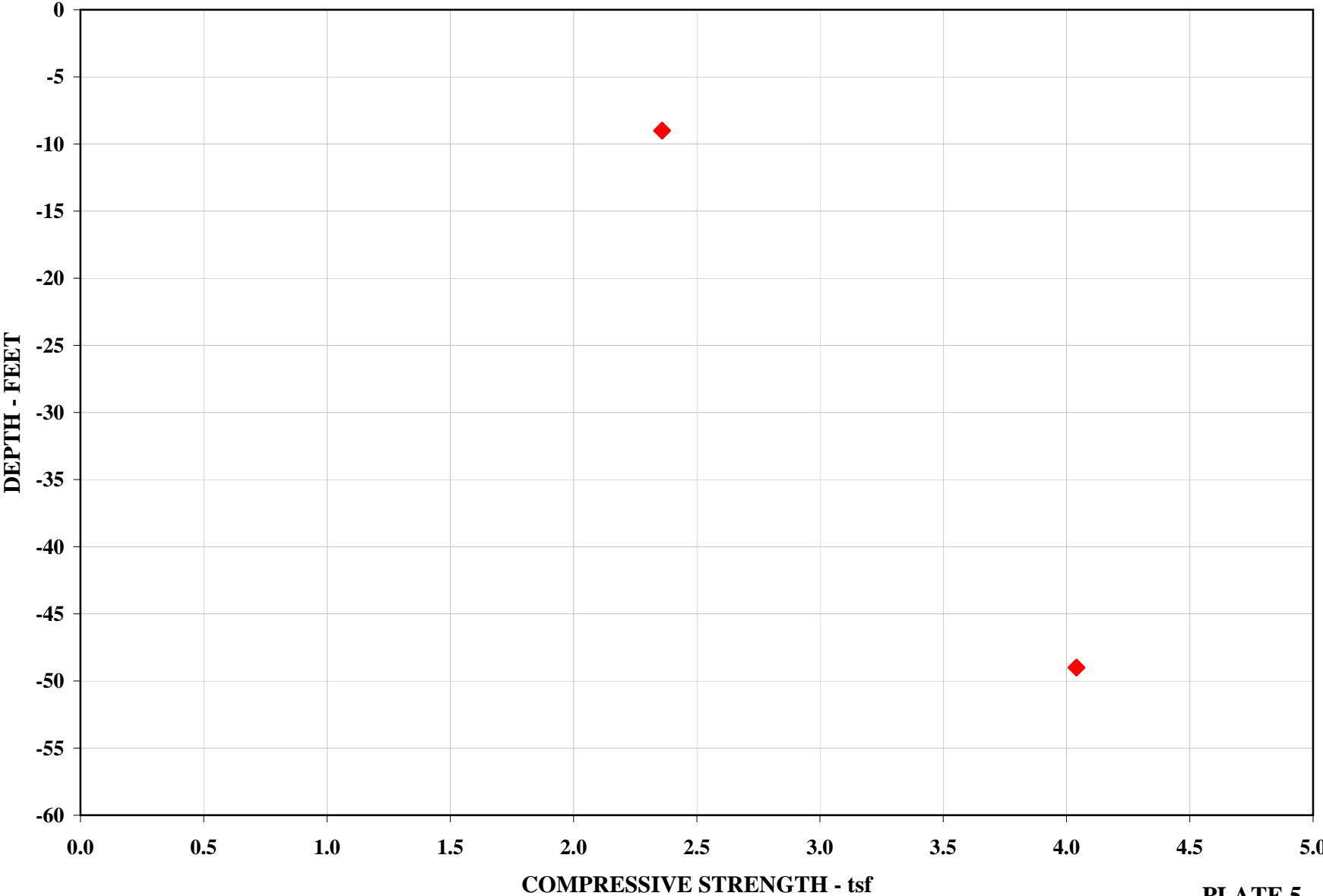
PLATE 3

**EMERGENCY SERVICE CENTER**  
**MOISTURE CONTENT - DRY DENSITY VS DEPTH**

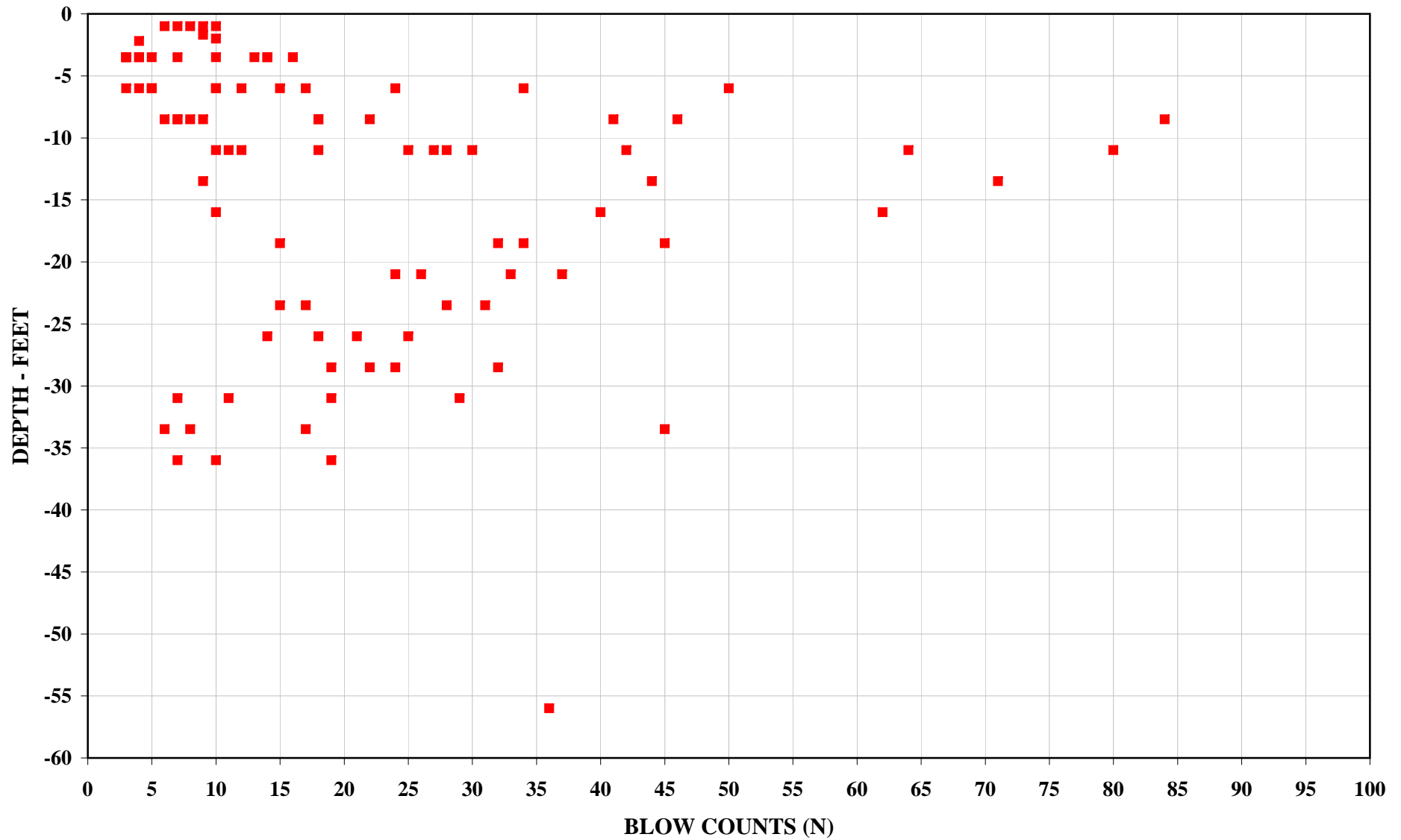


**PLATE 4**

**EMERGENCY SERVICE CENTER  
ULTIMATE COMPRESSIVE STRENGTH VS DEPTH**



## EMERGENCY SERVICE CENTER STANDARD PENETRATION TEST BLOW COUNTS VS DEPTH

**PLATE 6**

## **APPENDIX C**

### **LABORATORY TESTING DATA**

**SUMMARY OF LABORATORY TEST RESULTS**

**LABORATORY TESTING SERVICES  
EMERGENCY SERVICE CENTER  
FORT POLK , LOUISIANA**

Boring No.	Sample No.	Sample Depth (ft.)	Visual Description & Unified Soil Classification (ASTM D-2488)		Percent Passing Sieve						
					#4	#10	#20	#40	#60	#80	#100 #200
8A2S-ESC-2	SPT-1	2.5	Reddish brown silty sand	SM	100.0	100.0	100.0	98.6	82.1	49.7	41.3 29.3
	SPT-2	5	Reddish brown silty sand	SM	100.0	100.0	100.0	98.4	82.3	53.3	44.7 33.1
	SPT-3	7.5	Reddish brown clayey sand	SC	100.0	100.0	100.0	98.8	84.9	58.1	50.5 39.8
	SPT-4	10	Reddish brown clayey sand	SC	100.0	100.0	100.0	98.9	80.9	49.8	40.0 29.6
	SPT-5	12.5	Reddish brown and tan silty sand	SM	100.0	100.0	100.0	98.6	78.0	37.0	27.2 16.8
	SPT-6	15	Light tan silty sand	SM	100.0	100.0	100.0	98.4	81.3	35.9	24.5 17.1
	SPT-7	17.5	Light tan silty sand	SM	100.0	100.0	99.8	93.8	47.1	22.3	18.8 14.6
	SPT-8	20	Tan and gray silty sand with clay	SC-SM	100.0	100.0	99.9	96.7	87.6	83.2	81.4 48.9
	SPT-9	22.5	Reddish brown clayey sand	SC	100.0	100.0	98.4	85.3	57.1	46.1	44.5 42.9
	SPT-10	25	Light tan sand with silt	SP-SM	100.0	100.0	99.7	86.4	43.5	13.1	8.8 5.6
	SPT-11	27.5	Light tan silty sand	SP	100.0	100.0	100.0	71.4	21.0	8.1	5.8 3.8
	SPT-12	30	Light tan sand with silt	SP-SM	100.0	100.0	100.0	83.5	16.0	8.2	7.3 5.6
	SPT-13	32.5	Light tan and reddish brown sand with silt	SP-SM	100.0	99.8	95.8	70.0	18.1	11.0	10.0 7.8
	SPT-14	35	Tan silty sand	SM	100.0	99.8	99.5	97.8	86.1	58.1	45.0 21.7
	H	35-40	Tan and light gray sandy clay	CH	99.8	99.8	99.7	97.5	87.1	76.1	70.8 57.0
	I	40-45	Tan and light gray clay	CH	100.0	99.9	99.6	98.9	96.4	94.2	93.4 91.5
	J	45-50	Tan and light gray clay	CH	100.0	100.0	100.0	99.5	98.3	97.3	97.0 90.7
	K	50-55	Tan and light gray clay	CH	100.0	100.0	100.0	99.5	97.8	96.5	95.9 91.0
	L	55-60	Light gray clay	CH	100.0	100.0	100.0	99.7	98.9	97.6	96.3 87.3
8A2S-ESC-4	SPT-1	2.5	Reddish brown sand	SP	99.8	99.7	99.6	96.2	68.8	28.7	19.2 3.7
	SPT-2	5	Reddish brown clayey sand	SC	99.6	99.5	99.4	97.7	79.9	57.4	52.2 42.7
	ST-1	8-10	Reddish brown clayey sand	SC	100.0	100.0	99.9	97.3	66.1	40.7	37.2 32.1
	C	10-15	Reddish brown clayey sand	SC	100.0	100.0	100.0	97.3	66.9	36.7	32.5 28.9
	SPT-3	17.5	Reddish brown and tan silty sand with clay	SC-SM	100.0	100.0	99.9	97.4	54.6	30.6	27.5 24.1
	SPT-4	22.5	Red, tan and gray silty sand	SM	100.0	100.0	100.0	98.7	69.1	30.4	25.1 22.2
	SPT-5	23	Red, tan and gray silty sand	SM	100.0	100.0	99.8	91.7	71.1	45.7	33.2 15.0
	SPT-6	25	Tan and gray clayey sand	SC	100.0	100.0	99.3	82.8	53.7	29.4	21.9 13.3
	SPT-7	27.5	Light tan sand with silt	SP-SM	100.0	100.0	99.9	94.5	40.9	10.9	8.8 5.7
	SPT-8	30	Red, brown and tan silty sand	SM	100.0	100.0	99.4	87.1	43.4	20.9	18.3 14.3
	SPT-9	32.5	Tan and light gray clay	CH	100.0	100.0	100.0	99.3	95.4	94.3	94.1 93.6
	SPT-10	35	Tan and light gray clay	CH	100.0	100.0	100.0	100.0	99.5	99.5	99.5 99.4
	H	35-40	Tan and light gray clay	CH	100.0	100.0	100.0	99.7	99.0	98.7	98.7 98.5
	I	40-45	Tan and light gray clay	CH	100.0	100.0	100.0	99.1	95.0	93.0	92.7 92.2
	ST-5	48-50	Light tan clay with some sand	CH	100.0	100.0	100.0	99.9	99.2	98.3	96.8 85.9
	K	50-55	Light tan clay with some sand	CH	100.0	100.0	99.9	99.8	98.9	97.5	96.4 86.7
	L	55-60	Tan and light gray clay with sand	CH	100.0	100.0	99.7	95.5	82.2	78.8	78.1 73.9

**SUMMARY OF LABORATORY TEST RESULTS**

**LABORATORY TESTING SERVICES  
EMERGENCY SERVICE CENTER  
FORT POLK , LOUISIANA**

Boring No.	Sample No.	Sample Depth (ft.)	Visual Description & Unified Soil Classification (ASTM D-2488)		Percent Passing Sieve							
					#4	#10	#20	#40	#60	#80	#100	#200
10A2S-ESC-6	A	0-5	Reddish brown silty sand	SM	99.8	99.5	99.3	97.8	79.3	52.1	45.0	33.3
	B	5-10	Reddish brown silty sand with clay	SC-SM	99.6	99.2	99.0	96.5	76.2	50.7	44.1	35.7
10A2S-ESC-10	A	0-5	Reddish brown silty sand	SM	99.7	99.3	98.9	97.0	72.7	45.8	38.9	28.4
	B	5-10	Reddish brown and tan silty sand with clay	SC-SM	99.5	97.6	97.1	96.1	79.9	50.2	41.1	30.2
10A2S-ESC-11	A	0-5	Reddish brown and tan silty sand	SM	100.0	99.9	99.8	97.6	73.6	45.5	37.1	27.2
	B	5-10	Reddish brown, tan and gray silty sand with clay	SC-SM	99.3	98.9	98.4	91.6	53.5	34.9	31.7	27.8
10A2S-ESC-12	A	0-5	Reddish brown and tan silty sand	SM	99.2	98.8	98.5	96.5	73.9	49.0	43.1	31.7
	B	5-10	Reddish brown and tan silty sand	SM	99.0	98.4	98.2	96.6	65.9	35.7	33.4	27.5



**SUMMARY OF LABORATORY TEST RESULTS**
**LABORATORY TESTING SERVICES  
EMERGENCY SERVICE CENTER  
FORT POLK , LOUISIANA**

Boring No.	Sample No.	Sample Depth (ft.)	Visual Description & Unified Soil Classification (ASTM D-2488)		Moisture Content (%)	Unit Dry Weight (pcf)	Atterberg Limits			Consolidation Test
							LL	PL	PI	
8A2S-ESC-2	SPT-1	2.5	Reddish brown silty sand	SM	9.0	---	Non-Plastic			
	SPT-2	5	Reddish brown silty sand	SM	11.0	---	Non-Plastic			
	SPT-3	7.5	Reddish brown clayey sand	SC	17.7	---	38	13	25	
	SPT-4	10	Reddish brown clayey sand	SC	14.3	---	33	14	19	
	SPT-5	12.5	Reddish brown and tan silty sand	SM	9.4	---	Non-Plastic			
	SPT-6	15	Light tan silty sand	SM	10.9	---	Non-Plastic			
	SPT-7	17.5	Light tan silty sand	SM	9.9	---	Non-Plastic			
	SPT-8	20	Tan and gray silty sand with clay	SC-SM	16.6	---	20	15	5	
	SPT-9	22.5	Reddish brown clayey sand	SC	16.5	---	51	17	34	
	SPT-10	25	Light tan sand with silt	SP-SM	6.3	---	Non-Plastic			
	SPT-11	27.5	Light tan silty sand	SP	5.1	---	Non-Plastic			
	SPT-12	30	Light tan sand with silt	SP-SM	16.3	---	Non-Plastic			
	SPT-13	32.5	Light tan and reddish brown sand with silt	SP-SM	21.2	---	Non-Plastic			
	SPT-14	35	Tan silty sand	SM	26.2	---	Non-Plastic			
	H	35-40	Tan and light gray sandy clay	CH	41.0	---	57	19	38	
	I	40-45	Tan and light gray clay	CH	44.5	---	102	30	72	
	J	45-50	Tan and light gray clay	CH	40.9	---	77	27	50	
8A2S-ESC-4	K	50-55	Tan and light gray clay	CH	42.0	---	80	26	54	
	L	55-60	Light gray clay	CH	21.5	---	64	19	45	
	SPT-1	2.5	Reddish brown sand	SP	11.3	---	Non-Plastic			
	SPT-2	5	Reddish brown clayey sand	SC	16.6	---	35	13	22	
	ST-1	8-10	Reddish brown clayey sand	SC	14.9	112.7	28	14	14	*
	C	10-15	Reddish brown clayey sand	SC	14.5	---	25	13	12	
	SPT-3	17.5	Reddish brown and tan silty sand with clay	SC-SM	14.8	---	21	15	6	
	SPT-4	22.5	Red, tan and gray silty sand	SM	13.9	---	Non-Plastic			
	SPT-5	23	Red, tan and gray silty sand	SM	8.8	---	Non-Plastic			
	SPT-6	25	Tan and gray clayey sand	SC	6.8	---	25	14	11	
	SPT-7	27.5	Light tan sand with silt	SP-SM	8.4	---	Non-Plastic			
	SPT-8	30	Red, brown and tan silty sand	SM	19.9	---	Non-Plastic			
	SPT-9	32.5	Tan and light gray clay	CH	48.6	---	116	31	85	
	SPT-10	35	Tan and light gray clay	CH	43.9	---	96	31	65	
	H	35-40	Tan and light gray clay	CH	45.9	---	82	26	56	
	I	40-45	Tan and light gray clay	CH	41.6	---	91	29	62	
	ST-5	48-50	Light tan clay with some sand	CH	18.1	112.3	53	15	38	*
	K	50-55	Light tan clay with some sand	CH	18.4	---	56	17	39	
	L	55-60	Tan and light gray clay with sand	CH	32.5	---	55	20	35	

\* See attached "Laboratory Test Data Sheets" for Consolidation Test Results

**SUMMARY OF LABORATORY TEST RESULTS**
**LABORATORY TESTING SERVICES  
EMERGENCY SERVICE CENTER  
FORT POLK , LOUISIANA**

Boring No.	Sample No.	Sample Depth (ft.)	Visual Description & Unified Soil Classification (ASTM D-2488)		Moisture Content (%)	Unit Dry Weight (pcf)	Atterberg Limits			Consolidation Test
							LL	PL	PI	
10A2S-ESC-6	A	0-5	Reddish brown silty sand	SM	10.4	---	Non-Plastic			
	B	5-10	Reddish brown silty sand with clay	SC-SM	14.1	---	19	13	6	
10A2S-ESC-10	A	0-5	Reddish brown silty sand	SM	7.3	---	Non-Plastic			
	B	5-10	Reddish brown and tan silty sand with clay	SC-SM	12.9	---	18	13	5	
10A2S-ESC-11	A	0-5	Reddish brown and tan silty sand	SM	10.2	---	Non-Plastic			
	B	5-10	Reddish brown, tan and gray silty sand with clay	SC-SM	12.6	---	20	14	6	
10A2S-ESC-12	A	0-5	Reddish brown and tan silty sand	SM	11.7	---	Non-Plastic			
	B	5-10	Reddish brown and tan silty sand	SM	12.3	---	Non-Plastic			

**SUMMARY OF LABORATORY TEST RESULTS**
**LABORATORY TESTING SERVICES  
EMERGENCY SERVICE CENTER  
FORT POLK , LOUISIANA**

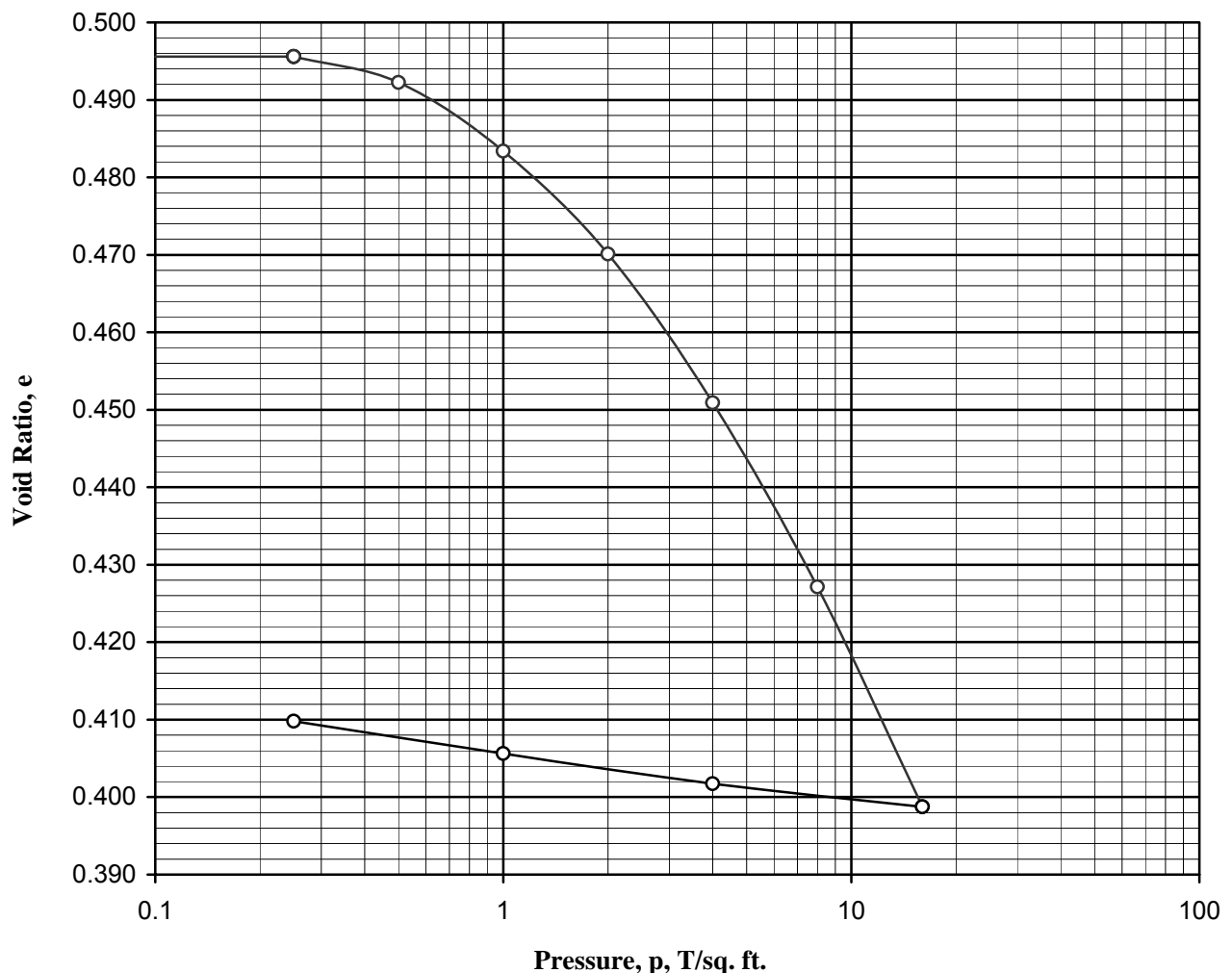
Boring No.	Sample No.	Sample Depth (ft.)	Visual Description & Unified Soil Classification (ASTM D-2488)		Moisture Content (%)	Unit Dry Weight (pcf)	Confining Pressure (tsf)	Q (tsf)	Strain @ Failure (%)	Type Failure
8A2S-ESC-2	SPT-1	2.5	Reddish brown silty sand	SM	9.0	---	---	---	---	
	SPT-2	5	Reddish brown silty sand	SM	11.0	---	---	---	---	
	SPT-3	7.5	Reddish brown clayey sand	SC	17.7	---	---	---	---	
	SPT-4	10	Reddish brown clayey sand	SC	14.3	---	---	---	---	
	SPT-5	12.5	Reddish brown and tan silty sand	SM	9.4	---	---	---	---	
	SPT-6	15	Light tan silty sand	SM	10.9	---	---	---	---	
	SPT-7	17.5	Light tan silty sand	SM	9.9	---	---	---	---	
	SPT-8	20	Tan and gray silty sand with clay	SC-SM	16.6	---	---	---	---	
	SPT-9	22.5	Reddish brown clayey sand	SC	16.5	---	---	---	---	
	SPT-10	25	Light tan sand with silt	SP-SM	6.3	---	---	---	---	
	SPT-11	27.5	Light tan silty sand	SP	5.1	---	---	---	---	
	SPT-12	30	Light tan sand with silt	SP-SM	16.3	---	---	---	---	
	SPT-13	32.5	Light tan and reddish brown sand with silt	SP-SM	21.2	---	---	---	---	
	SPT-14	35	Tan silty sand	SM	26.2	---	---	---	---	
	H	35-40	Tan and light gray sandy clay	CH	41.0	---	---	---	---	
	I	40-45	Tan and light gray clay	CH	44.5	---	---	---	---	
	J	45-50	Tan and light gray clay	CH	40.9	---	---	---	---	
8A2S-ESC-4	K	50-55	Tan and light gray clay	CH	42.0	---	---	---	---	
	L	55-60	Light gray clay	CH	21.5	---	---	---	---	
	SPT-1	2.5	Reddish brown sand	SP	11.3	---	---	---	---	
	SPT-2	5	Reddish brown clayey sand	SC	16.6	---	---	---	---	
	ST-1	8-10	Reddish brown clayey sand	SC	14.9	112.7	0.562	2.359	2.5	Vertical
	C	10-15	Reddish brown clayey sand	SC	14.5	---	---	---	---	
	SPT-3	17.5	Reddish brown and tan silty sand with clay	SC-SM	14.8	---	---	---	---	
	SPT-4	22.5	Red, tan and gray silty sand	SM	13.9	---	---	---	---	
	SPT-5	23	Red, tan and gray silty sand	SM	8.8	---	---	---	---	
	SPT-6	25	Tan and gray clayey sand	SC	6.8	---	---	---	---	
	SPT-7	27.5	Light tan sand with silt	SP-SM	8.4	---	---	---	---	
	SPT-8	30	Red, brown and tan silty sand	SM	19.9	---	---	---	---	
	SPT-9	32.5	Tan and light gray clay	CH	48.6	---	---	---	---	
	SPT-10	35	Tan and light gray clay	CH	43.9	---	---	---	---	
	H	35-40	Tan and light gray clay	CH	45.9	---	---	---	---	
	I	40-45	Tan and light gray clay	CH	41.6	---	---	---	---	
	ST-5	48-50	Light tan clay with some sand	CH	18.1	112.3	3.062	4.040	5.4	Internal
	K	50-55	Light tan clay with some sand	CH	18.4	---	---	---	---	
	L	55-60	Tan and light gray clay with sand	CH	32.5	---	---	---	---	

**SUMMARY OF LABORATORY TEST RESULTS**
**LABORATORY TESTING SERVICES  
 EMERGENCY SERVICE CENTER  
 FORT POLK , LOUISIANA**

<b>Boring No.</b>	<b>Sample No.</b>	<b>Sample Depth (ft.)</b>	<b>Visual Description &amp; Unified Soil Classification (ASTM D-2488)</b>	<b>Moisture Content (%)</b>	<b>Unit Dry Weight (pcf)</b>	<b>Confining Pressure (tsf)</b>	<b>Q (tsf)</b>	<b>Strain @ Failure (%)</b>	<b>Type Failure</b>
10A2S-ESC-6	A	0-5	Reddish brown silty sand	SM	10.4	---	---	---	---
	B	5-10	Reddish brown silty sand with clay	SC-SM	14.1	---	---	---	---
10A2S-ESC-10	A	0-5	Reddish brown silty sand	SM	7.3	---	---	---	---
	B	5-10	Reddish brown and tan silty sand with clay	SC-SM	12.9	---	---	---	---
10A2S-ESC-11	A	0-5	Reddish brown and tan silty sand	SM	10.2	---	---	---	---
	B	5-10	Reddish brown, tan and gray silty sand with clay	SC-SM	12.6	---	---	---	---
10A2S-ESC-12	A	0-5	Reddish brown and tan silty sand	SM	11.7	---	---	---	---
	B	5-10	Reddish brown and tan silty sand	SM	12.3	---	---	---	---

# TEAM Consultants, Inc.

## Geotechnical, Environmental, Construction Materials Testing

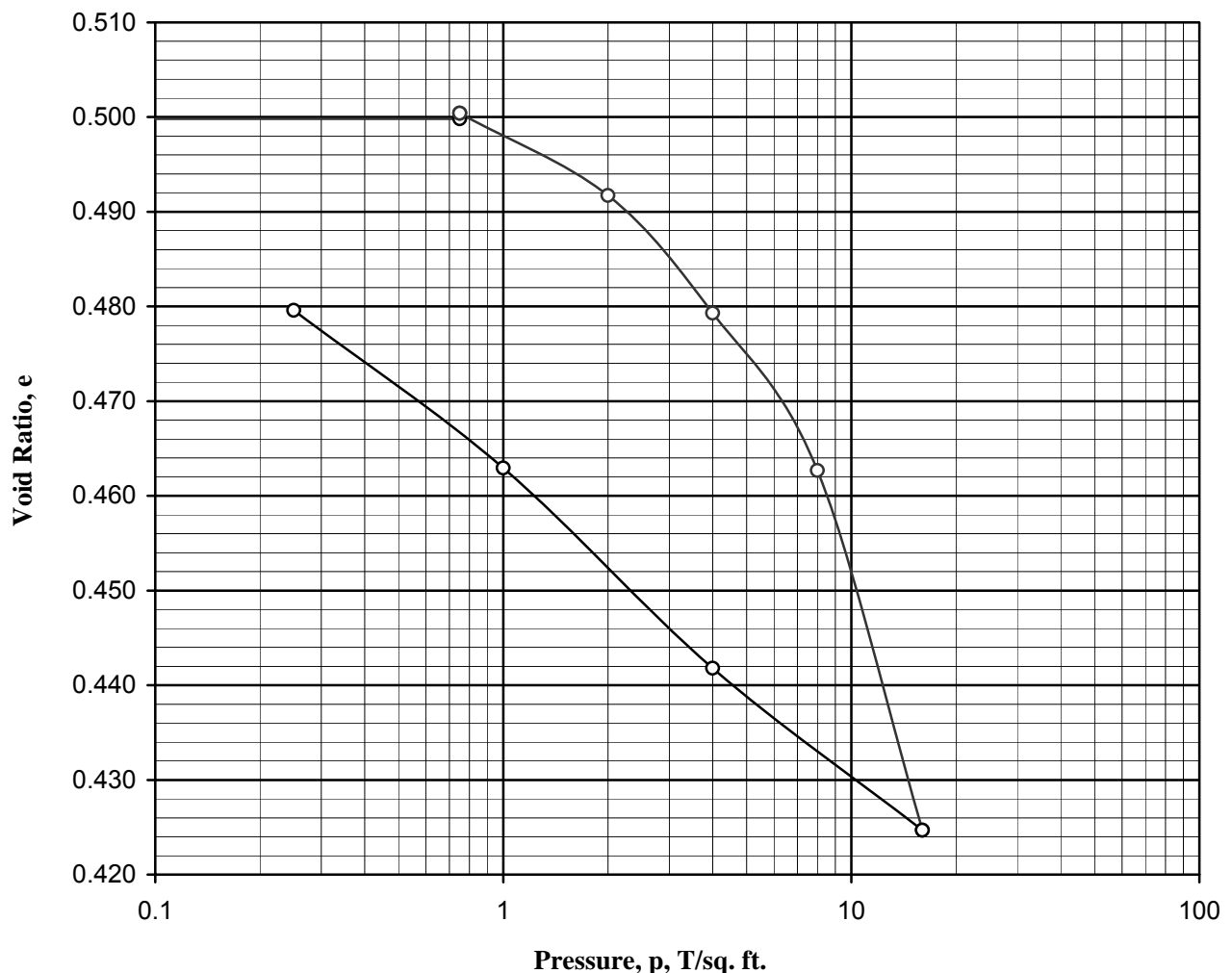


Type of specimen:		Undisturbed	Before Test		After Test					
Diam.	2.50	in.	Ht.	0.502	in.	Water Content, $w_o$	14.95%	$W_f$	14.62%	
Overburden Pressure, $P_o$					T/sq. ft.	Void Ratio, $e_o$		0.4956	$e_f$	0.4098
Preconsol. Pressure, $P_c$					T/sq. ft.	Saturation, $S_o$		81.4%	$S_f$	96.3%
Compression Index, $C_c$						Dry Density, $\gamma_d$		112.7	lb/ft <sup>3</sup>	
Classification      Reddish brown clayey sand										
LL	28	$G_s$		2.700 (assumed)		Project  Fort Polk Emergency Service Center				
PL	14									
Remarks						Team Project No.:      082032				
						Boring No:8A2S-ESC-4		Sample No.:    ST-1		
						Depth:    8-10'		Date:            5/9/08		
						CONSOLIDATION TEST REPORT				

Friday, September 07, 2012

# TEAM Consultants, Inc.

## Geotechnical, Environmental, Construction Materials Testing



Type of specimen:		Undisturbed	Before Test		After Test				
Diam.	2.50	in.	Ht.	0.504	in.	Water Content, $w_o$	18.11%	$W_f$	17.80%
Overburden Pressure, $P_o$					T/sq. ft.	Void Ratio, $e_o$	0.4998	$e_f$	0.4796
Preconsol. Pressure, $P_c$					T/sq. ft.	Saturation, $S_o$	97.8%	$S_f$	100.2%
Compression Index, $C_c$					Dry Density, $\gamma_d$	112.3	lb/ft <sup>3</sup>		
Classification      Light tan clay with some sand									
LL	53	$G_s$	2.700 (assumed)		Project  Fort Polk Emergency Service Center  Team Project No.:      082032  Boring No:8A2S-ESC-4      Sample No.:      ST-5  Depth:      48-50'      Date:      5/9/08  <b>CONSOLIDATION TEST REPORT</b>				
PL	15								
Remarks									

Friday, September 07, 2012

## **APPENDIX D**

### **DYNAMIC CONE PENETROMETER (DCP) TESTING DATA PLOTS**

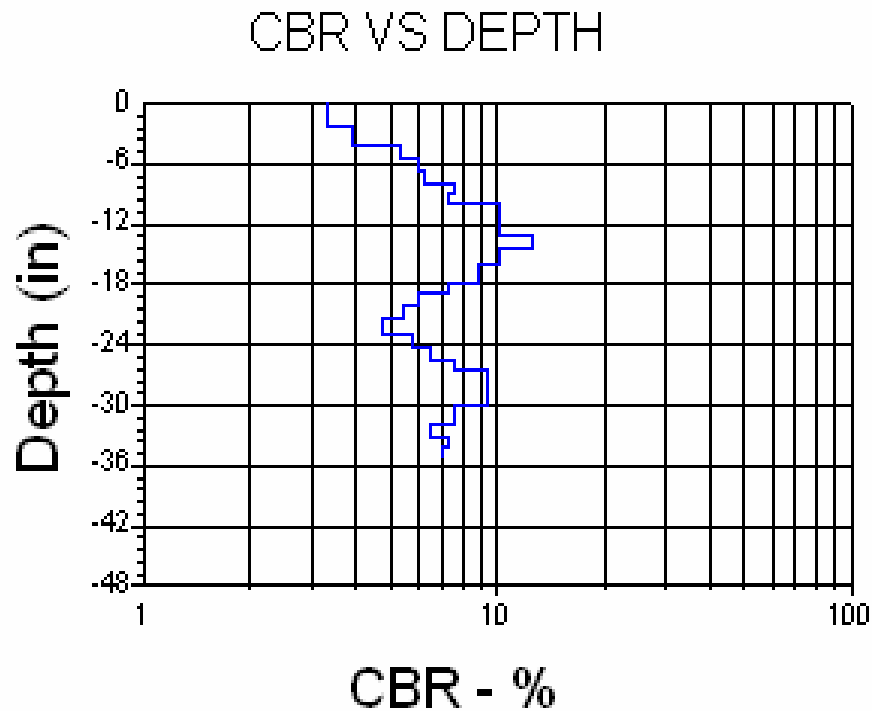
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-5

Station: 10A2S-ESC-5



(MM)	TEST PROFILE	(IN)
0		0
127	SUBGRADE 6.00" CBR 4	5
254	UNASSIGNED 6.00" CBR 8	10
381	UNASSIGNED 6.00" CBR 10	15
508	UNASSIGNED 6.00" CBR 6	20
635	UNASSIGNED 6.00" CBR 8	25
762	UNASSIGNED 5.50" CBR 7	30
889		35
1016		40
1143		45
1270		50



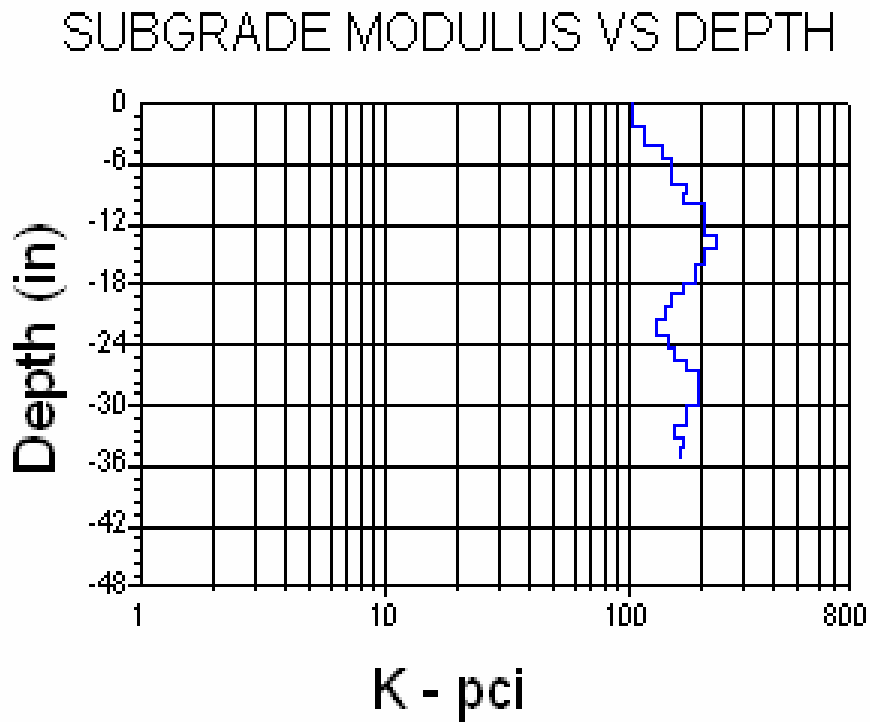
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-5

Station: 10A2S-ESC-5



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" K 124	0
127	UNASSIGNED 6.00" K 174	5
254	UNASSIGNED 6.00" K 202	10
381	UNASSIGNED 6.00" K 144	15
508	UNASSIGNED 6.00" K 175	20
635	UNASSIGNED 5.50" K 165	25
762		30
889		35
1016		40
1143		45
1270		50

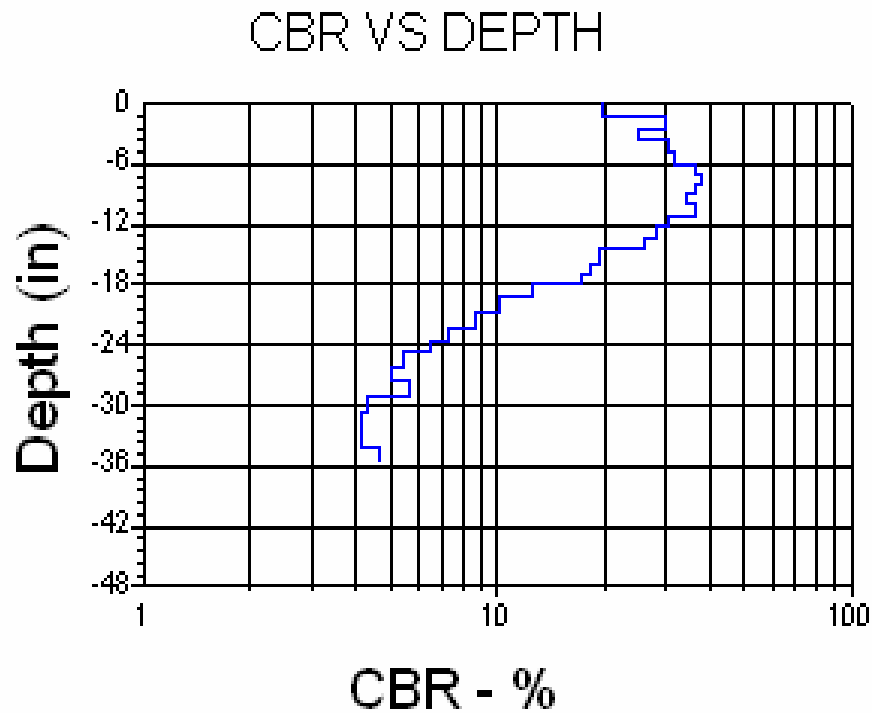
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-6

Station: 10A2S-ESC-6



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" CBR 28	0
127	UNASSIGNED 6.00" CBR 35	5
254	UNASSIGNED 6.00" CBR 22	10
381	UNASSIGNED 6.00" CBR 9	15
508	UNASSIGNED 6.00" CBR 5	20
635	UNASSIGNED 6.00" CBR 5	25
762	UNASSIGNED 5.75" CBR 4	30
889		35
1016		40
1143		45
1270		50

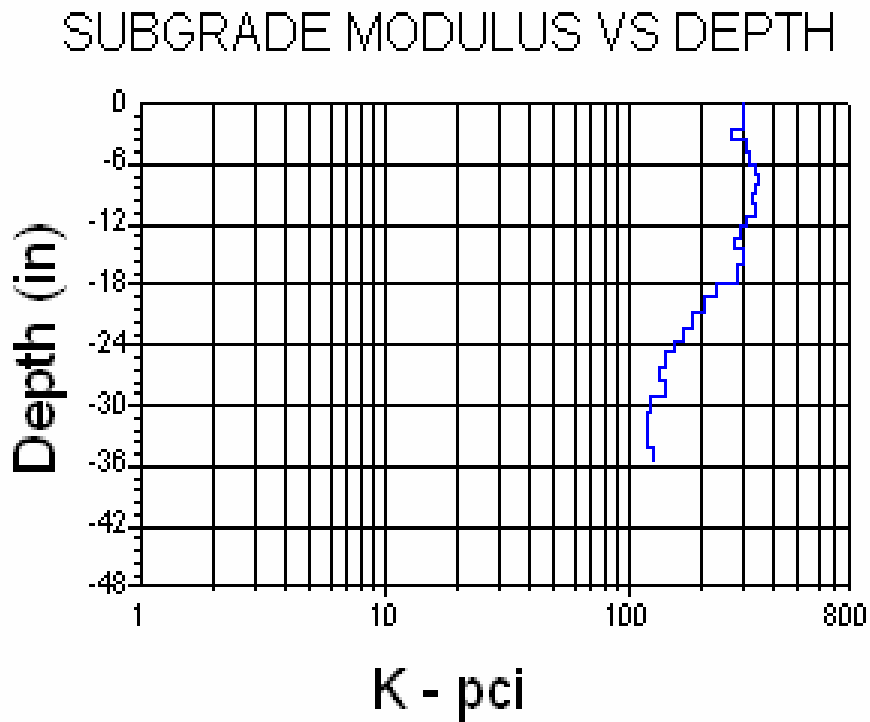
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-6

Station: 10A2S-ESC-6



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" K 301	0
127	UNASSIGNED 6.00" K 333	5
254	UNASSIGNED 6.00" K 282	10
381	UNASSIGNED 6.00" K 187	15
508	UNASSIGNED 6.00" K 140	20
635	UNASSIGNED 5.75" K 123	25
762		30
889		35
1016		40
1143		45
1270		50

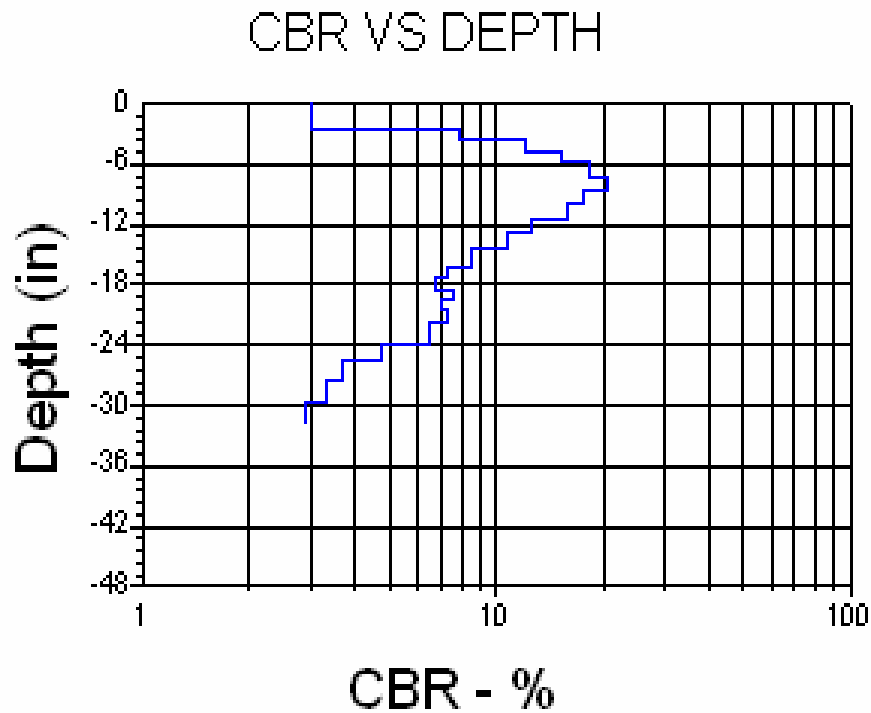
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-7

Station: 10A2S-ESC-7



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" CBR 11	0
127	UNASSIGNED 6.00" CBR 17	5
254	UNASSIGNED 6.00" CBR 9	10
381	UNASSIGNED 6.00" CBR 7	15
508	UNASSIGNED 6.00" CBR 4	20
635	UNASSIGNED 6.00" CBR 4	25
762	UNASSIGNED 2.25" CBR 3	30
889		35
1016		40
1143		45
1270		50

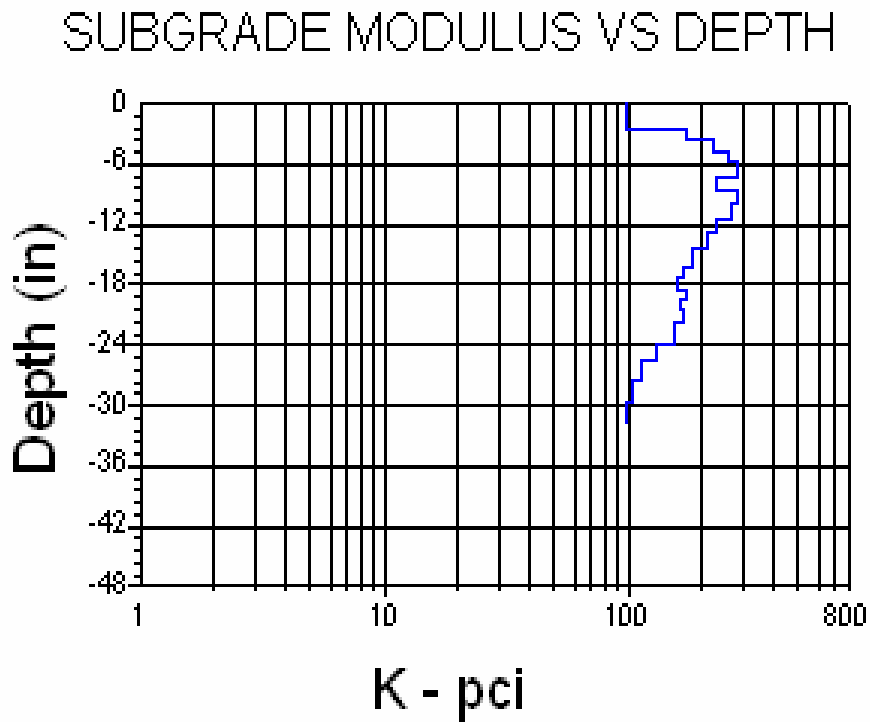
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-7

Station: 10A2S-ESC-7



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" K 200	0
127	UNASSIGNED 6.00" K 258	5
254	UNASSIGNED 6.00" K 189	10
381	UNASSIGNED 6.00" K 160	15
508	UNASSIGNED 6.00" K 111	20
635	UNASSIGNED 6.00" K 98	25
762	UNASSIGNED 2.25" K 98	30
889		35
1016		40
1143		45
1270		50

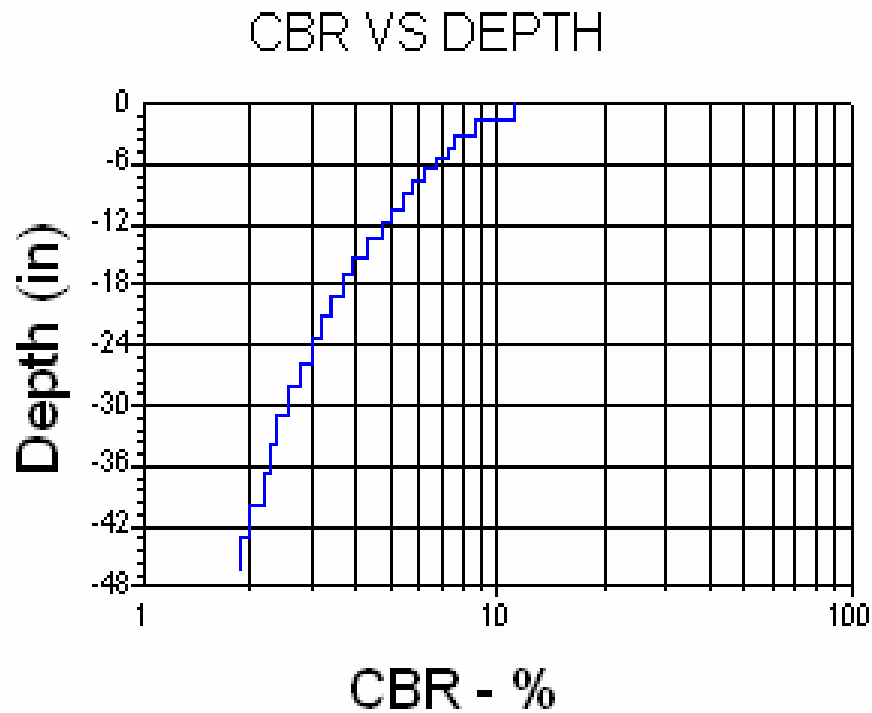
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-8

Station: 10A2S-ESC-8



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" CBR 8	0
127	UNASSIGNED 6.00" CBR 6	5
254	UNASSIGNED 6.00" CBR 4	10
381	UNASSIGNED 6.00" CBR 3	15
508	UNASSIGNED 6.00" CBR 3	20
635	UNASSIGNED 6.00" CBR 3	25
762	UNASSIGNED 16.75" CBR 2	30
889	UNASSIGNED 16.75" CBR 2	35
1016	UNASSIGNED 16.75" CBR 2	40
1143	UNASSIGNED 16.75" CBR 2	45
1270	UNASSIGNED 16.75" CBR 2	50

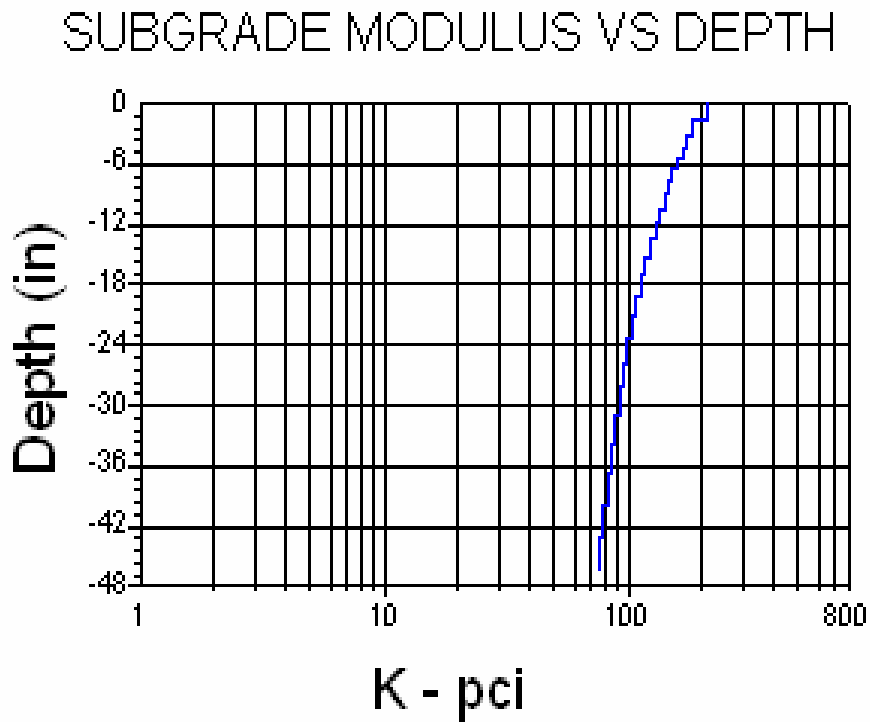
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-8

Station: 10A2S-ESC-8



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" K 182	0
127	UNASSIGNED 6.00" K 144	5
254	UNASSIGNED 6.00" K 120	10
381	UNASSIGNED 6.00" K 106	15
508	UNASSIGNED 6.00" K 96	20
635	UNASSIGNED 6.00" K 83	25
762		30
889		35
1016		40
1143		45
1270		50

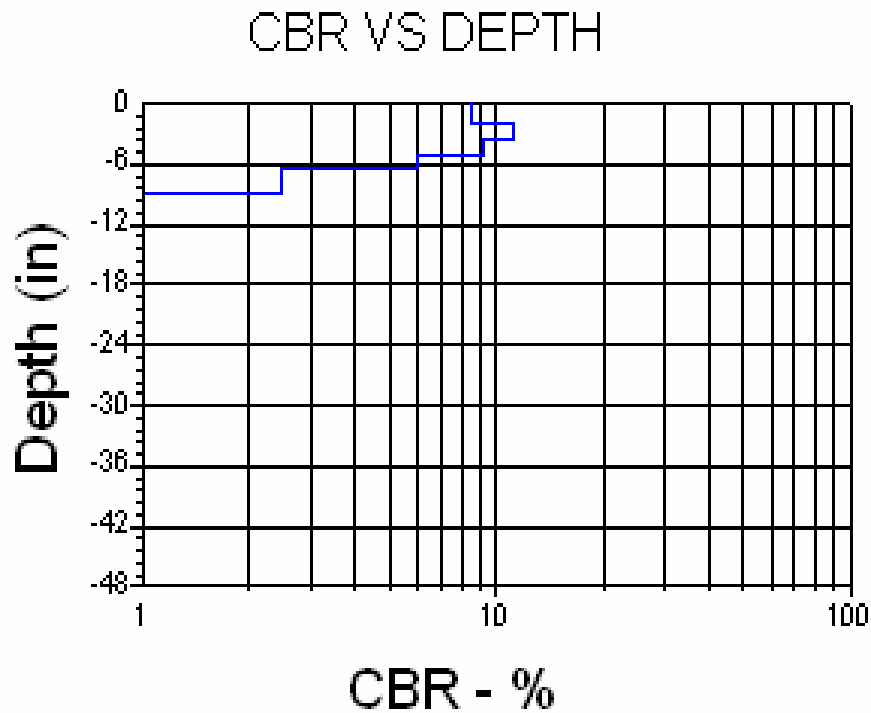
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-9

Station: 10A2S-ESC-9



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" CBR 9	0
127	UNASSIGNED 6.00" CBR 3	5
254	UNASSIGNED 6.00" CBR 1	10
381	UNASSIGNED 6.00" CBR 1	15
508	UNASSIGNED 6.00" CBR 1	20
635	UNASSIGNED 12.00" CBR 1	25
762	UNASSIGNED 11.25" CBR 1	30
889		35
1016		40
1143		45
1270		50



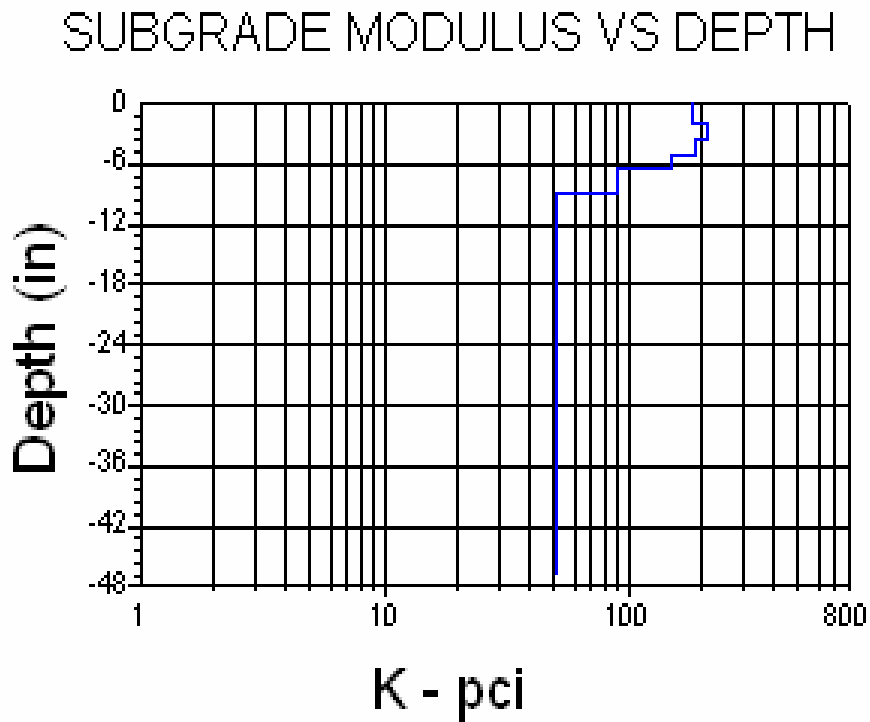
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-9

Station: 10A2S-ESC-9



(MM)	TEST PROFILE	(IN)
0		0
127	SUBGRADE 6.00" K 189	5
254	UNASSIGNED 6.00" K 95	10
381	UNASSIGNED 6.00" K 51	15
508	UNASSIGNED 6.00" K 51	20
635		25
762	UNASSIGNED 12.00" K 51	30
889		35
1016	UNASSIGNED 11.25" K 51	40
1143		45
1270		50

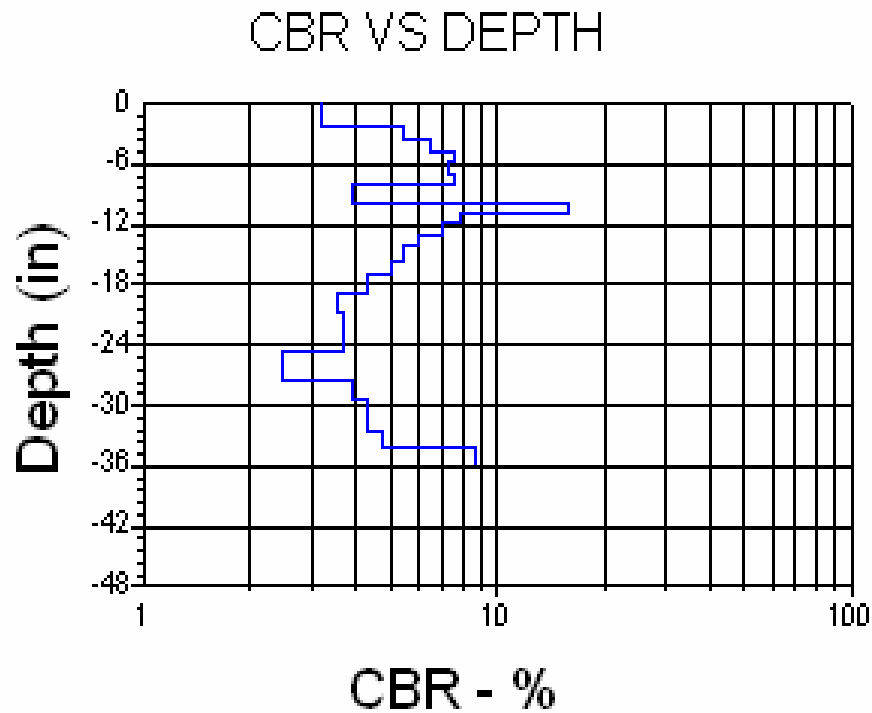
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-10

Station: 10A2S-ESC-10



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" CBR 6	0
127		5
254	UNASSIGNED 6.00" CBR 8	10
381	UNASSIGNED 6.00" CBR 6	15
508	UNASSIGNED 6.00" CBR 4	20
635	UNASSIGNED 6.00" CBR 3	25
762	UNASSIGNED 6.25" CBR 6	30
889		35
1016		40
1143		45
1270		50

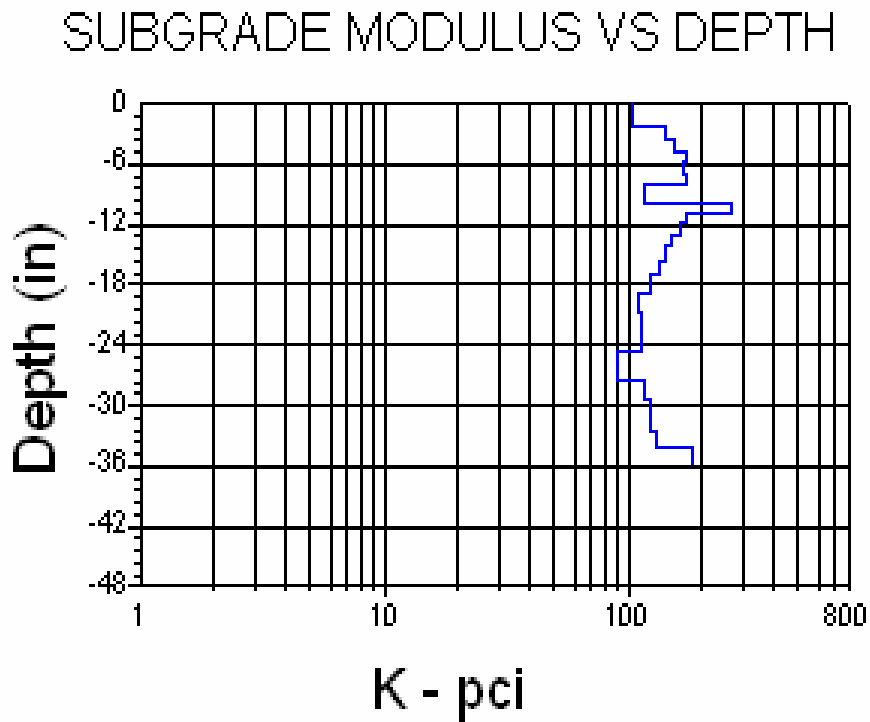
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-10

Station: 10A2S-ESC-10



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" K 146	0
127	UNASSIGNED 6.00" K 178	5
254	UNASSIGNED 6.00" K 142	10
381	UNASSIGNED 6.00" K 113	15
508	UNASSIGNED 6.00" K 108	20
635	UNASSIGNED 6.00" K 108	25
762	UNASSIGNED 6.25" K 143	30
889		35
1016		40
1143		45
1270		50

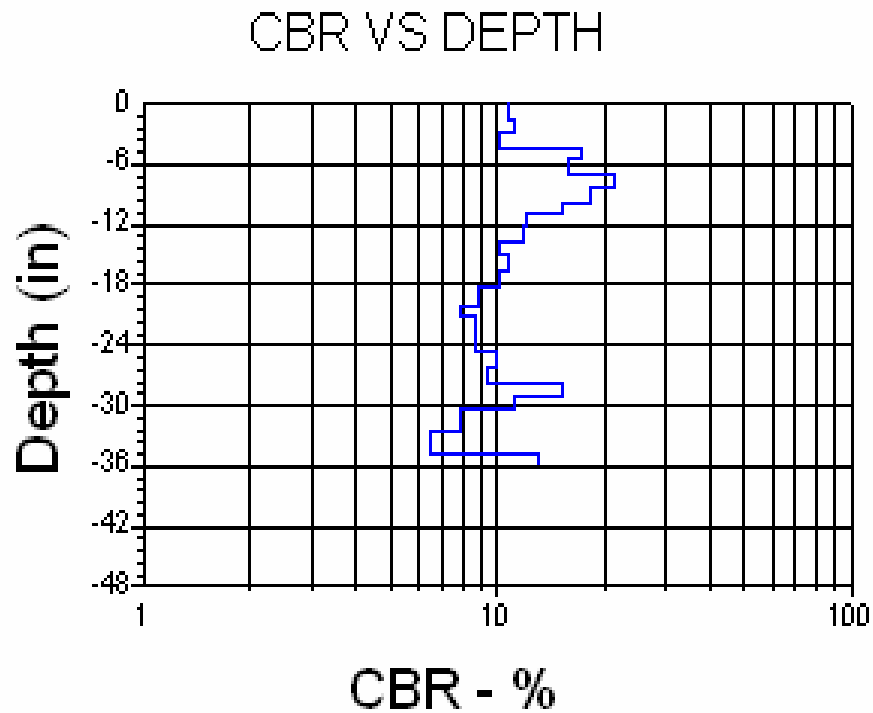
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-11

Station: 10A2S-ESC-11



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" CBR 13	0
127	UNASSIGNED 6.00" CBR 17	5
254	UNASSIGNED 6.00" CBR 11	10
381	UNASSIGNED 6.00" CBR 9	15
508	UNASSIGNED 6.00" CBR 11	20
635	UNASSIGNED 6.00" CBR 9	25
762	UNASSIGNED 6.25" CBR 9	30
889		35
1016		40
1143		45
1270		50

## DCP TEST DATA

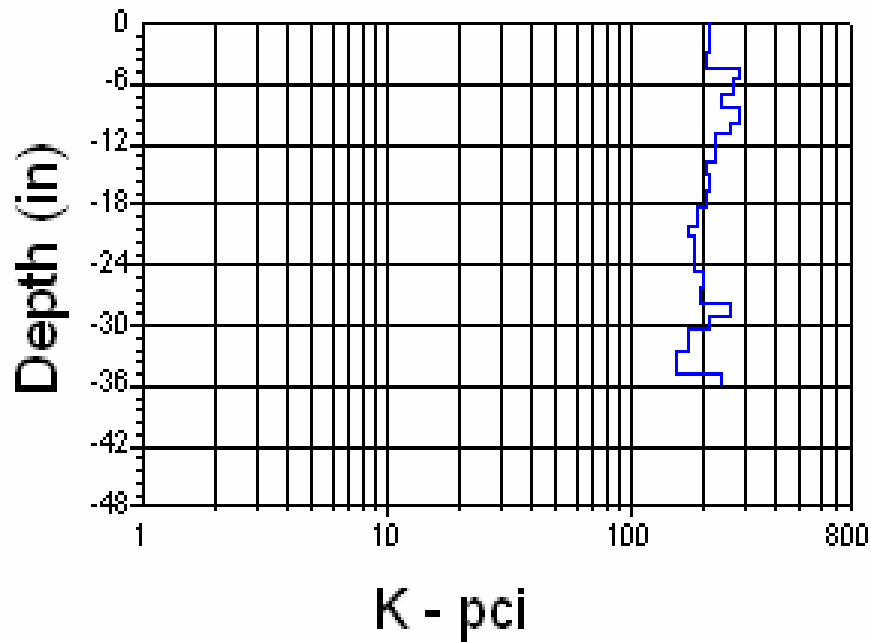
Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-11

Station: 10A2S-ESC-11

### SUBGRADE MODULUS VS DEPTH



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" K 230	0
127	UNASSIGNED 6.00" K 256	5
254	UNASSIGNED 6.00" K 212	10
381	UNASSIGNED 6.00" K 186	15
508	UNASSIGNED 6.00" K 213	20
635	UNASSIGNED 6.25" K 193	25
762		30
889		35
1016		40
1143		45
1270		50

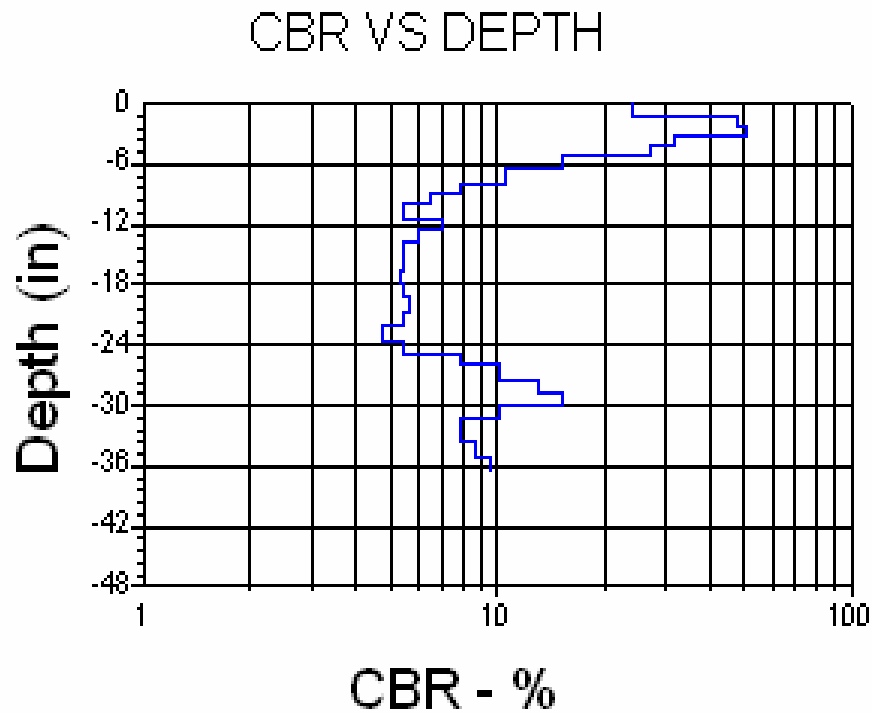
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-12

Station: 10A2S-ESC-12



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" CBR 34	0
127	UNASSIGNED 6.00" CBR 8	5
254	UNASSIGNED 6.00" CBR 6	10
381	UNASSIGNED 6.00" CBR 5	15
508	UNASSIGNED 6.00" CBR 11	20
635	UNASSIGNED 7.00" CBR 9	25
762		30
889		35
1016		40
1143		45
1270		50

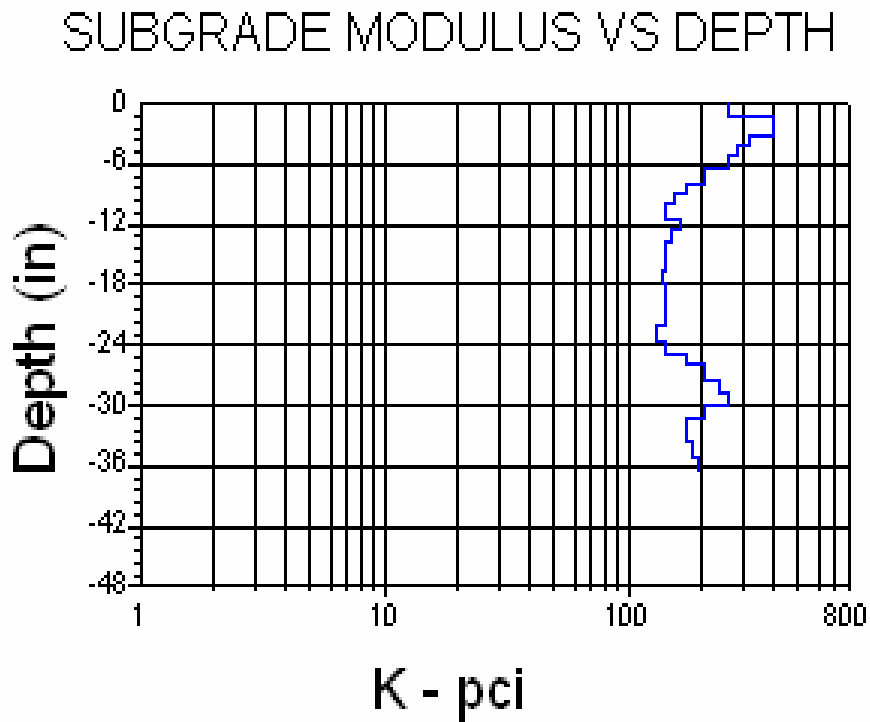
## DCP TEST DATA

Project: Emergency Service Center

Date: 9 April 2008

Feature: 10A2S-ESC-12

Station: 10A2S-ESC-12



(MM)	TEST PROFILE	(IN)
0	SUBGRADE 6.00" K 323	0
127	UNASSIGNED 6.00" K 178	5
254	UNASSIGNED 6.00" K 144	10
381	UNASSIGNED 6.00" K 139	15
508	UNASSIGNED 6.00" K 209	20
635	UNASSIGNED 6.00" K 188	25
762	UNASSIGNED 7.00" K 188	30
889		35
1016		40
1143		45
1270		50

## **APPENDIX E**

### **MAT FOUNDATION DESIGN CRITERIA**



WALLACE

REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
SOUTHWESTERN DIVISION, CORPS OF ENGINEERS  
1114 COMMERCE STREET  
DALLAS, TEXAS 75242-0216

CESWD-ED-TS/G (415a)

29 JAN 1989

## MEMORANDUM FOR:

Commander, Albuquerque District, ATTN: CESWA-ED  
✓ Commander, Fort Worth District, ATTN: CESWF-ED-DT  
Commander, Galveston District, ATTN: CESWG-ED  
Commander, Little Rock District, ATTN: CESWL-ED  
Commander, Tulsa District, ATTN: CESWT-ED

SUBJECT: Design Criteria for Ribbed Mat Foundations

1. This letter supersedes criteria letter, SWDED-TS/G, 23 Dec 1986, SAB.
2. The enclosed criteria shall be used for design of all ribbed mat foundations. This criteria has been revised to conform with the definition of swell pressure (soil-beam interface pressure) as presented in criteria letter, SWDED-G, 16 Apr 1987, subject: Criteria for Developing Geotechnical Design Parameters for SWD Ribbed Mat Design Methodology. Also, clarification has been provided for application of the PTI design method to family housing.
3. This criteria is furnished to addressees only.

FOR THE COMMANDER:

Encl

*William D. Denys*  
ARTHUR D. DENYS, P.E.  
Chief, Engineering Division

IV

7-01

10 YEARS OF SERVICE

TO THE SOUTHWEST

**DESIGN OF RIBBED MAT FOUNDATIONS**

**BY**

**JOSEPH P. HARTMAN**

**AND**

**B. H. JAMES**

**U.S. ARMY CORPS OF ENGINEERS**

**SOUTHWESTERN DIVISION**

**DALLAS, TEXAS**

**REVISED**

**JANUARY 1988**

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## PART I - GENERAL REQUIREMENTS FOR RIBBED MATS

## 1. REFERENCES.

1.1 Engineering Instruction Manual, Corps of Engineers, Southwestern Division, (latest edition).

1.2 "Criteria for Selection and Design of Residential Slabs-on-Ground," Building Research Advisory Board (BRAB), Report No. 33 to the Federal Housing Administration, 1968.

1.3 "Design and Construction of Post-Tensioned Slabs-on-Ground," Post Tensioning Institute (PTI), 1980.

1.4 TM 5-818-7, Foundations in Expansive Soils, Corps of Engineers, 1983.

1.5 Letter, SWDED-G, 16 April 1987, Criteria for Developing Geotechnical Design Parameters for Ribbed Mat Design Methodology (Criteria Letter XV 7-12).

2. BACKGROUND. Ribbed mat foundations consist of a thin slab on grade which acts monolithically with a grid of stiffening beams beneath the slab. The beams (ribs) are cast in trenches dug in the foundation soil. Ribbed mats combine the economic advantages of shallow foundations with the performance advantages of monolithic floors. Ribbed mats are especially useful for minimizing differential foundation movements in areas with expansive soils.

## 3. DESIGN METHODS.

## 3.1 EXPANSIVE SOILS.

## 3.1.1 Behavior.

3.1.1.1 Center Lift. In the center lift condition the soil near the edge of the slab drops in relation to the soil near the center. This is due to moisture retention by the interior soils and the drying and shrinking of perimeter soils. As this occurs, the perimeter soil provides less support for the edge of the slab which then acts as a cantilever. This is illustrated in Figure A1 of Appendix A.

3.1.1.2 Edge Lift. In the edge lift condition the soil near the edge of the slab rises in relation to the soil near the center. This is due to the increasing moisture content and subsequent swelling of soil near the edge. The swelling soil raises the edge of the slab, causing some of the slab to lift off the soil. Interior loads cause the slab to sag and recontact the soil at some interior location. The slab thus tends to act as

a beam, simply supported by the soil at the edge, and by soil towards the center of the slab. The amount of support at the center depends on numerous parameters such as interior loads, rib bending stiffness, soil swell pressures, and the magnitude of soil swelling. Typical edge lift behavior is illustrated in Figure A3 of Appendix A.

3.1.2 SWD Method. All ribbed mats on expansive soils, except for family housing, shall be designed in accordance with the provisions of Part II of this report. Ribbed mats for family housing may be designed in accordance with Part II or paragraphs 3.1.3 or 3.1.4.

3.1.3 PTI Method. The PTI method (reference 1.3) may only be used for design of family housing foundations on expansive soils. Specifically, slab width (short dimension) should not exceed 40 feet, rib depths should not exceed 30 inches, loading should consist only of perimeter loads and light interior distributed loads ( $DL+LL \leq 100$  psf), soils should be fairly weak in-situ materials with no extensive substitution of non-expansive fill. When using the PTI method, the following provisions shall apply: Rib spacing shall not exceed 15 feet; concrete tensile stress shall not exceed  $4\sqrt{f'_c}$ ; the minimum effective prestress shall be 100 psi.

3.1.4 BRAB Method. The BRAB report (reference 1.2) may only be used for design of foundations for family housing. However, the PTI method is preferred, since the BRAB method may produce unreasonable results for large foundations.

3.1.5 Computer Method. In lieu of paragraph 3.1.2, ribbed mats may be designed using appropriate computer programs. Such programs must be capable of modeling the variable soil swell due to moisture changes, and the non-linear soil-structure interaction near the perimeter of the foundation. One such computer program is CBEAMC, program X0050 in the Corps of Engineers Civil Engineering Library.

3.1.6 Load Factors. When using the above methods to design ribbed mats for center lift and edge lift conditions, load factors may be multiplied by .75 (strength method) or allowable stresses may be increased by one-third (working stress method). This provision does not apply to the allowables given for the PTI method, since those allowables have already been increased from the usual provisions of ACI.

3.2 NON-EXPANSIVE SOILS. Ribbed mat slabs on non-expansive soils need not be designed for bending due to center lift or edge lift conditions. Beam on elastic foundation analyses may be used to determine the effects of concentrated loads on ribs, or ribs may be designed as conventional strip or spot footings.

3.3 SOIL PROPERTIES. Soil properties for design of ribbed mats will be provided in the Foundation Design Analysis by the Corps of Engineers. Criteria for developing these properties is included in reference 1.5. The properties necessary for design in accordance with paragraph 3.1.2 consist of the following, which are defined in Appendix A:

- qa - allowable bearing pressure
- k - subgrade modulus
- Ym - soil heave
- Lm - edge moisture variation distance
- Psw - pressure of swelling soil acting on perimeter rib

#### 4. MINIMUM REQUIREMENTS.

4.1 SUBGRADE PREPARATION. A vapor barrier, capillary water barrier, and a minimum of 18 inches of non-expansive fill will normally be used beneath ribbed mats. Additional non-expansive fill will often be used to lessen the effects of highly expansive soils. These requirements will be detailed in the Foundation Design Analysis.

4.2 SLAB. For family housing and other small lightly loaded buildings a 4 inch slab may be used. For other buildings the minimum slab thickness will be 5 inches. Minimum slab reinforcing shall be 0.2 percent. Where slabs are subjected to vehicular loading they must be designed for the maximum wheel load, similar to paving. Use 650 psi flexural strength concrete for slabs subject to wheel loads.

4.3 GRID GEOMETRY. Ribs should be located to form a continuous grid. Rib spacing should not exceed 20 feet in expansive soils, or 25 feet in non-expansive soils. Locations of ribs should conform to significant wall and column loads, and may be used to resist thrusts from rigid frame reactions. Ribs should be provided around large openings in the slab. In expansive soils diagonal ribs are required at exterior corners.

Expansion joints should be provided at 250 foot intervals, and should also be used to break irregularly shaped buildings into rectangular segments. Foundations for family housing do not require expansion joints due to irregular shapes.

4.4 RIB SIZE. Minimum rib depth is 20 inches. Rib depths should usually not exceed 3 feet to minimize construction difficulties related to placing reinforcement and maintaining trench walls. If deeper ribs are used, rib width should also be increased. Minimum rib width is 12 inches except for family housing foundations, where 10 inch ribs may be used. Sufficient rib width must also be provided to transfer wall and column loads to the soil as strip footings. The allowable soil bearing capacity may not be exceeded when considering the width of the rib plus an effective slab width on each side of the rib. The

effective slab width for bearing is limited to the thickness of the slab. At column locations an alternate is to provide fillets at rib intersections, sufficient to act as spot footings for column loads.

4.5 RIB CAPACITY. Concrete should have a minimum compressive strength of  $f'_c=3000$  psi at 28 days. Reinforcing shall be grade 60, except ties may be grade 40. Minimum reinforcing ratio ( $A_s/A_g$ ) shall be .0033 top and .0033 bottom, this may be reduced to .005 total in non-expansive soils. Use #3 ties at 24 inches, minimum. These minimums should be sufficient for shrinkage stresses and for unpredictable soil behavior.

4.6 PRESTRESSED MATS. For prestressed ribbed mats, not designed per PTI, all the above minimum requirements apply except that slab and rib top reinforcement may be deleted and replaced by appropriate post-tensioning strands. Mild steel shall still be provided in the bottom of ribs. Minimum effective prestress shall be 100 psi on the gross area of the slab, including effects of subgrade friction as calculated by the PTI method, reference 1.3. Concrete tensile stress shall be limited to  $3/\sqrt{f'_c}$  and shear stress limited to  $1.1/\sqrt{f'_c}$ . A one-third overstress may be allowed per paragraph 3.1.6.

#### 4.7 CONSTRUCTION DETAILS.

4.7.1 Conventionally Reinforced. Construction joint spacing should not exceed 50 feet in either direction. A horizontal construction joint may be provided in the ribs at the base of the capillary water barrier when unstable trench walls may cause construction difficulties. However, this joint is discouraged because of increased potential for shrinkage cracks in the slab.

4.7.2 Prestressed. Construction joint spacing shall not exceed 75 feet in either direction. Tendons within each placement shall be stressed to 15 percent of the final prestress not more than 24 hours after the concrete has attained sufficient strength to withstand the partial prestress. Other construction procedures for prestressed ribbed mats shall conform to reference 1.3.

4.7.3 Contractor Designs. Ribbed mat foundations may be designed as prestressed or conventionally reinforced as selected by the engineer. The plans and specifications shall not include the option of changing the ribbed mat from one type to another. The reason for this prohibition is that design parameters (e.g., moments of inertia) may be dependent on the type of ribbed mat being designed and may affect calculated shears and moments. This does not prohibit revisions of the slab type as a result of contractor value engineering proposals. However, such revisions must include a complete design of the ribbed mat foundation using appropriate design parameters in accordance with this report.

## PART II - ANALYSIS OF RIBBED MAT FOUNDATIONS ON EXPANSIVE SOILS

1. SCOPE. This part of the report contains the basic rules for design of ribbed mats in expansive soils. This method may be used to predict shears, moments and deflections in ribs subject to soil movement due to changing moisture content. For a commentary on the design method refer to Appendix A; for example design calculations refer to Appendix B. The design method from Part II should be used in conjunction with the "minimum requirements" for ribbed mats, as presented in Part I.

### 2. GENERAL

#### 2.1 NOTATION.

C	= Correction factor for equivalent cantilever length
D	= Beam deflection (IN)
I	= Moment of inertia per foot, $I=I_r/S$ (IN <sup>4</sup> /FT)
$I_r$	= Moment of inertia of rib (IN <sup>4</sup> )
* k	= Modulus of subgrade reaction (PCI)
$L_o$	= Basic length of cantilever (FT)
$L_c$	= Equivalent length of cantilever, center lift (FT)
$L_e$	= Equivalent length of simple beam, edge lift (FT)
$L_i$	= Distance from perimeter to location of interior load (FT)
* $L_m$	= Edge moisture variation distance (FT)
$L_b$	= Width of soil bearing at perimeter, edge lift (FT)
M	= Bending moment per foot (FT-LB/FT)
$M_r$	= Bending moment per rib, $M_r=M \times S$ (FT-LB)
$P_i$	= Interior load (PLF)
$P_p$	= Perimeter load (PLF)
* $P_{sw}$	= Pressure of swelling soil on perimeter rib (PSF)
R	= End reaction at perimeter for equivalent simple beam (PLF)
S	= Rib spacing (FT)
w	= Uniform load (PSF)
V	= Shear per foot (LB/FT)
$V_r$	= Shear per rib, $V_r=V \times S$ (LB)
* $Y_m$	= Soil heave (IN)
$\theta$	= Rotation of support of equivalent cantilever (RAD)

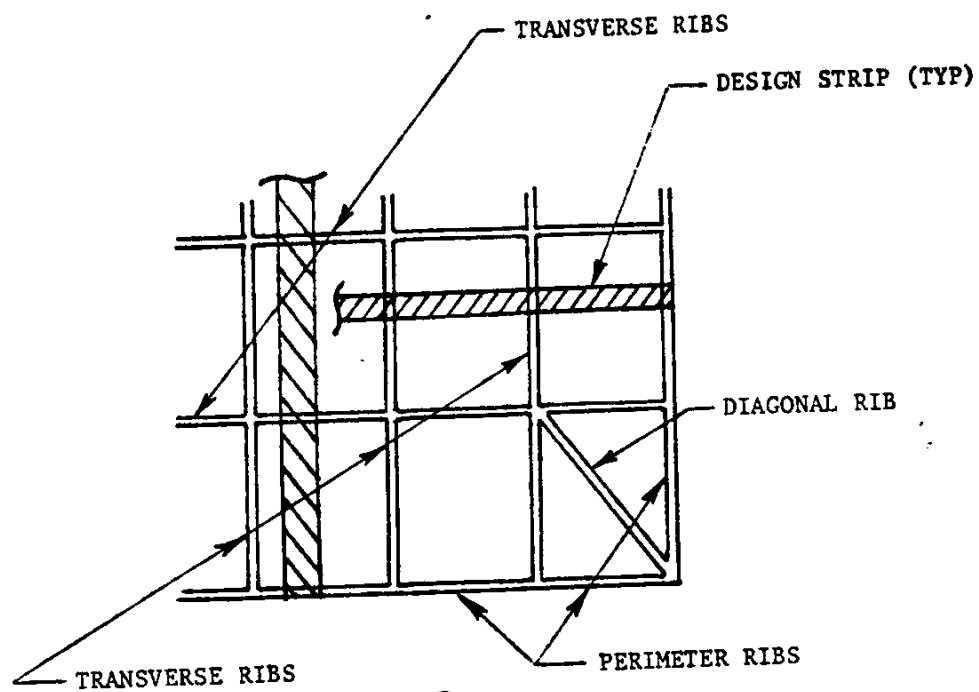
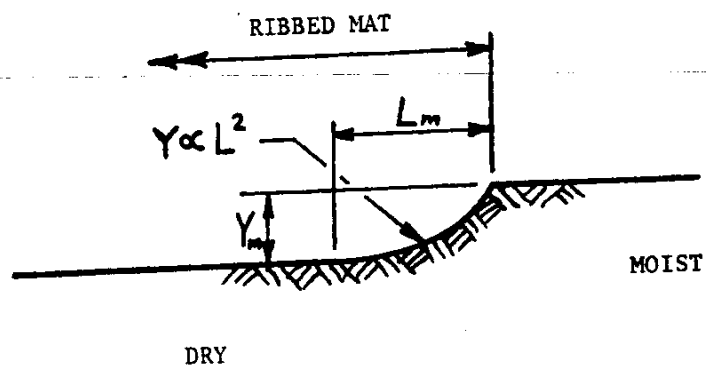
\*  $q_a$  = ALLOWABLE  
BEARING  
PRESSURE  
(PSF)

2.2 UNITS. The equations presented in section 3 are written for units as defined in the above notation. If other units are used the equations must be modified appropriately.

2.3 RIB DEFINITIONS. Ribs are defined as perimeter, transverse or diagonal as shown in Figure 1. Note that transverse refers to ribs parallel to either axis of the building.

\* VALUES NEEDED FROM GEOTECH



FIGURE 1 - RIB DEFINITIONSFIGURE 2 - SOIL EDGE PROFILE

2.4 STRIP ANALYSIS. The analysis is based on a strip assumption, ignoring the effects of the grid configuration of the ribs. The formulas and examples presented below are for an equivalent 1-foot strip, using "per foot" values for loads and stiffness.

2.5 SOIL EDGE PROFILE. For edge lift the maximum swell occurs at the perimeter and decreases rapidly toward the interior. The soil profile is assumed to be parabolic (in the unloaded condition) and is illustrated in Figure 2.

### 3. ANALYSIS METHOD.

#### 3.1 TRANSVERSE RIB - CENTER LIFT.

3.1.1 General. Center lift analysis is based on an equivalent cantilever beam to determine moments, shears and deflections.

3.1.2 Moment. The length of the equivalent cantilever can be calculated as:

$$L_c = C \times L_o$$

where:  $L_o = 2.3 + .4 L_m$

$$C = .8 Y_m^{.12} I^{.16} / P_p^{.12}$$

The maximum moment may then be calculated from statics using conventional cantilever formulas such as:

$$M = P_p L_c + 1/2 w L_c^2$$

The moment can then be assumed to be constant for a distance  $L_c/2$  and then to decrease linearly to zero at a distance  $5L_c$  from the perimeter. To obtain the design moment for a given rib, multiply the calculated per-foot moment by the appropriate rib spacing ( $M_r = M \times S$ ).

3.1.3 Shear. The maximum shear may be calculated from statics using the same equivalent cantilever as for moment.

$$V = P_p + w L_c$$

The shear may then be assumed to decrease linearly from  $V$  at the cantilever support, to zero at a distance  $5L_c$  from the perimeter. To obtain the design shear for a given rib, multiply the calculated per-foot shears by the appropriate rib spacing ( $V_r = V \times S$ ).

3.1.4 Deflection. Deflection at the perimeter is the sum of three components: bending deflection of the equivalent cantilever, vertical translation of the cantilever support, and rotation

of the cantilever support. Rotation of the support may be calculated as:

$$\theta = M^{1.4} / 9800 I k^{.5}$$

The perimeter deflection is then:

$$D = .11 + 12 L_c \theta$$

where .11 inches is an approximation for the support translation plus the cantilever bending, and (12 L<sub>c</sub>) is the length in inches.

Use the deflection calculated above to compare with allowable deflection. The allowable deflection may be determined by using 4L<sub>c</sub> as the length between points of zero and maximum deflection.

### 3.2 TRANSVERSE RIB - EDGE LIFT.

3.2.1 General. Edge lift analysis is based on an equivalent simple beam, supported at the perimeter and at some interior location.

3.2.2 Deflection. The first step in calculating deflection is to determine the length of the equivalent simple beam. The appropriate length depends on many parameters, including the deflection. Therefore, deflection must first be estimated to determine equivalent length, then a deflection is calculated based on that length. The process is repeated until calculated deflection matches the assumed deflection. The equivalent simple beam length may be calculated as:

$$L_e = 7.5 I^{.17} L_i^{.37} D^{.12} / w^{.07} P_i^{.11}$$

The perimeter end reaction for this beam may be calculated from statics. For a given case the reaction may be:

$$R = P_p + 1/2 w L_e + P_i(L_e - L_i)/L_e$$

The width of soil bearing at the perimeter can be approximated as:

$$L_b = 1.1 (R/P_{sw})$$

where P<sub>sw</sub> is selected from a curve of heave versus bearing pressure, corresponding to the estimated deflection used during this iteration (see reference 1.5).

The edge deflection is found by determining the soil swell at a distance L<sub>b</sub> from the perimeter, based on the parabolic swell profile:

$$D = Y_m(L_m - L_b)^2 / L_m^2$$

When satisfying deflection criteria, use the calculated deflection and equivalent simple beam length.

3.2.3 Moment. Once the simple beam equivalent length has been determined, the bending moments may be calculated based on statics. To obtain rib design moments, multiply per-foot moments by the rib spacing.

3.2.4 Shear. Once the simple beam equivalent length has been determined, the shears may be calculated based on statics. To obtain rib design shears, multiply per-foot shears by the rib spacing. Near the interior support the design shear need not exceed:

$$V = P_i + w(L_e - L_i)$$

This is due to the effects of the actual distributed soil support, rather than the point support assumed in the simple beam analysis.

3.2.5 Special Cases. If  $P_i = 0$  or if  $L_i > L_e$  make the following substitution in the equation for  $L_e$ :

$$1.4 = L_i^{.37} / P_i^{.11}$$

The equation for the simple beam length then becomes:

$$L_e = 10.5 I^{.17} D^{.12} / w^{.07}$$

### 3.3 PERIMETER RIB.

3.3.1 Center Lift. For center lift the perimeter rib will have no support from the soil and must be designed to span between transverse ribs for the perimeter wall loads.

3.3.2 Edge Lift. For edge lift the soil pressure on the perimeter rib will exceed the applied perimeter loads. The perimeter rib must be designed to span between transverse ribs for this net upward force.

3.4 DIAGONAL RIB. Diagonal ribs are used to support exterior corners for center lift conditions, if loss of support occurs under both perimeter ribs. Diagonal ribs must be designed to provide the same moment and shear capacity as the larger of the two adjacent transverse ribs.

3.5 INTERIOR RIB. Interior ribs and rib intersections should be located at significant wall and column loads. The ribs can be designed for these loads as strip or spot footings, using beam-on-elastic-foundation methods. Differential soil movement due to moisture change is assumed not to occur except at the perimeter. However, to account for unpredictable interior soil movements, interior ribs must have the minimum size and capacity as required in Part I.

## APPENDIX A - COMMENTARY ON PART II

1. SCOPE. Actual behavior of ribbed mats in expansive soils involves complex, non-linear, soil-structure interaction. The best solution for such behavior is provided by computer programs. The hand design method has been developed to approximate such computer results. Hand solutions have been checked by computer analyses; results have been within acceptable limits of error. However, such checks have been made only for a limited range for each design parameter, as shown in Table A1, corresponding to the usual values for military construction within Southwestern Division. If a wider range of parameters is applied to the hand design formulas, the results may be less accurate.

TABLE A1

Parameter	Units	Minimum	Maximum
k	pci	50	200
Ym	in	0.5	3.0
Lm	ft	2	8
I	in <sup>4</sup> /ft	750	6000
Pp	lb/ft	1000	5000
Pi	lb/ft	0	5000
Li	ft	6	20
w	psf	100	250
Psw	psf	2000	8000

## 2. GENERAL.

## 2.1 NOTATION.

$I_r$  = moment of inertia of rib. For non-prestressed rib mats  $I_r$  should be the effective moment of inertia, calculated per ACI 318, Section 9.5.2.3.

$k$  = Modulus of subgrade reaction. This parameter is the ratio of the soil pressure at the base of the concrete and the corresponding settlement. Since modulus values are typically determined by plate-load test at the ground surface, they should be corrected for depth and for footing size (expected high pressure area between concrete and soil). Analyses have indicated that the high bearing pressure area for center lift conditions will occur in an area several feet long parallel to the transverse rib and several feet on each side of the rib. A crude approximation for this area would be 5 feet square. This approximation should be adequate for design, since calculations are not sensitive to small changes in the modulus of subgrade reaction.

$q_a$  = Allowable bearing pressure. This is the safe bearing capacity of the soil at the base of the ribs. A factor of safety of 3.0 is recommended for computing this value.

$L_m$  = Edge moisture variation distance. This represents the distance, inward from the edge of the slab, over which the moisture content of the soil changes. Much judgement is required in determining this value.

$P_{sw}$  = Pressure of swelling soil on perimeter rib. This is the interface pressure between the soil and the base of the exterior rib, due to an increase in soil moisture content. The pressure which can be exerted by the swelling soil is dependent on the amount the surface of the soil is allowed to rise. Therefore  $P_{sw}$  is usually presented as a curve of pressure versus heave, as described in reference 1.5 of Part I. The actual upward deflection of the edge of the slab is a complex interaction between swell potential, structural loads, and mat stiffness, all of which combine to determine the interface pressure near the perimeter.

$Y_m$  = Soil heave. This is the differential vertical movement of the soil representing either soil heave (edge lift) or soil shrinkage (center lift). The magnitude of  $Y_m$  is the computed vertical movement of a particle of soil at the ground surface due to a change in moisture content. This value should be based on the accumulation of potential volume changes for the full thickness of the active zone ( $Z_a$ ), with no significant loads applied to the foundation. The value of  $Y_m$  may differ for edge lift and center lift conditions.

$P_i, P_p, w$  = Applied loads. Loads should consist of full dead plus live loads, including dead load of the slab and ribs.

## 2.2 UNITS.

## 2.3 RIB DEFINITIONS.

2.4 STRIP ANALYSIS. The hand solution formulas have been developed for analysis of an equivalent 1 foot strip. This is convenient for uniform loads and for soil properties, but requires some calculations for appropriate concentrated loads and bending stiffness. Rib stiffness must be divided by rib spacing to get the per-foot stiffness. If column loads exist they must also be divided by the rib or column spacing to provide an equivalent load per foot. If interior wall loads are parallel to the transverse rib, they must be divided by the rib spacing. These calculations are illustrated in Appendix B.

2.5 SOIL EDGE PROFILE. The edge lift condition occurs when increased moisture content swells exterior soils, and this effect extends under the edge of the slab. The center lift condition occurs when soils under the slab are generally moist and seasonal drying occurs on the exterior, again extending under the slab. This causes the soil to shrink away from the edge of the slab.

The analysis method is based on an assumed parabolic swell profile which occurs uniformly along the perimeter. This is a convenient idealization of actual soil behavior, which is certainly more erratic. However, the parabolic profile has better correlation with measured swells than do other possible edge profile assumptions. Note that the soil profile is not used in the hand design formulas for center lift. However, a parabolic profile was used in the computer analyses for center lift, which formed the basis for the hand design formulas.

3. ANALYSIS METHOD. Many of the formulas for shears, moments and reactions are idealized, assuming  $P_p$  and  $R$  are exactly at the perimeter and that  $w$  extends to the perimeter. These approximations should usually be acceptable, but the formulas may be modified to account for actual load patterns.

### 3.1 TRANSVERSE RIB - CENTER LIFT

3.1.1 General. Typical behavior of a transverse rib for center lift conditions is shown in Figure A1. This illustrates the soil bearing pressure and the shear, moment and deflection. Note that the effects of the soil movement extend much farther than the moisture variation distance. The moment and shear distribution close to the edge resemble cantilever behavior.

3.1.2 Moment. The extent of significant moments is illustrated in Figure A1. The length of the equivalent cantilever can be taken as a basic length ( $L_0$ ) which is dependent on the moisture variation distance, times a correction factor ( $C$ ) which accounts for secondary effects of several parameters. The value of the correction factor will usually be slightly greater or less than unity. The correction factor was developed to permit accurate approximations of computer results. It was developed from the ratios of actual values to usual values for significant parameters. For example, the "usual" values are:  $Y_m = 1$  in,  $I = 1500$  in<sup>4</sup>/ft,  $P_p = 3000$  lb/ft. Thus:

$$C = (Y_m/1.0)^{.12} (I/1500)^{.16} (3000/P_p)^{.12}$$

$$C = .8 Y_m^{.12} I^{.16} / P_p^{.12}$$

A similar approach was used to develop all the formulas in Part II which have an exponential format.

3.1.3 Shear. Maximum shear occurs near the support of the equivalent cantilever. The extent of significant shears is illustrated in Figure A1.

3.1.4 Deflection. Formulas for deflection include an assumed concrete modulus of elasticity  $E_c = 3,320,000$  psi, for both center lift and edge lift.

Vertical movement at the perimeter is much greater than the bending deflection of the equivalent cantilever. To predict the deflection it is necessary to consider translation and rotation at the support of the equivalent beam. The most significant component is due to rotation at the support. These

components of deflection are shown in Figure A2. The sum of the cantilever bending and the support translation are approximated by the value 0.11 inch. The percent error due to this approximation is negligible when total deflections are large. The percent error is greater when total deflections are small, but then the deflections are not significant anyway.

Allowable deflections (see Part I, reference 1.1) are expressed as a ratio of the difference in vertical movement at any two points, compared to the distance between those points. For example:  $D \leq L/600$ , where  $D$  is the differential displacement. In such formulas it is appropriate to use the point of maximum deflection and a point of near-zero deflection as the two measuring points. For center lift behavior the maximum deflection occurs at the perimeter, and deflections tend to die out at approximately  $4L_c$  (four times the equivalent cantilever length) from the perimeter. Therefore, the ratio  $D/4L_c$  is appropriate for comparison with allowable deflections.

### 3.2 TRANSVERSE RIB - EDGE LIFT.

3.2.1 General. Typical behavior of a transverse rib for edge lift conditions is shown in Figure A3. This illustrates the soil bearing pressure and the shear, moment and deflection. Soil swell lifts the edge of the ribbed mat, which actually rises off the soil for some distance from the perimeter. For shear and moment, this portion of the rib acts as a simply supported beam spanning between soil support at the perimeter and at an interior location.

3.2.2 Deflection. Vertical movement at the perimeter is driven by the tendency of the soil to swell, and is resisted by the downward loads applied on the soil. As the soil swells at the perimeter the slab is lifted off the interior soil. This concentrates soil reactions near the edge, causing very high pressures. The pressures rise so high that they limit the capacity of the soil to swell. Thus, the soil cannot swell as much as it would if not loaded. Deflections can be predicted by balancing the upward force of the soil (the swell pressure times the bearing width) with the downward force of applied loads. This downward force can be determined from statics once an equivalent simple beam length is determined. The method for determining the deflection is shown in Figure A4.

Allowable deflections are expressed as ratios, as discussed in the commentary on paragraph 3.1.4. From Figure A3 it can be seen that the appropriate values for this ratio are the edge deflection and the equivalent simple beam length ( $D/L_c$ ).

Edge lift deflections are mainly a function of soil properties and applied loads, bending stiffness of the ribs has only a secondary effect. Therefore, it may not be possible to control deflections by increasing the rib stiffness. It may be necessary to accommodate calculated deflections by using a less brittle superstructure or by detailing the superstructure to make it less sensitive to deflections. Or it may be necessary to modify soil properties to minimize the edge heave.



3.2.3 Moment. The moments can be calculated by statics, using the equivalent simple beam. The maximum moment will occur at the point of zero shear. Note that the maximum moment is quite sensitive to the beam length, therefore the iterative solution for deflection and appropriate swell pressure must converge accurately before calculating moments.

3.2.4 Shear. Shears can also be calculated by statics from the equivalent simple beam. Note that shears will reduce gradually to near-zero around the interior end of the beam because of the distributed soil support.

3.2.5 Special Cases. If no concentrated interior load exists, or if it is very far from the perimeter, the formula for the simple beam length must be adjusted as shown. This adjusted formula was also developed to duplicate results from computer solutions.

### 3.3 PERIMETER RIB.

### 3.4 DIAGONAL RIB.

3.5 INTERIOR RIB. Potential soil heaves in the interior are unpredictable and are generally due to localized moisture conditions, for example, due to a leaking pipe. Such conditions cannot be accounted for by design formulas. Adequate strength and stiffness for such unpredictable heaves should be supplied by the minimum requirements listed in Part I of the report. For interior wall or column loads the interior ribs should be designed in accordance with Part I, section 3.2.

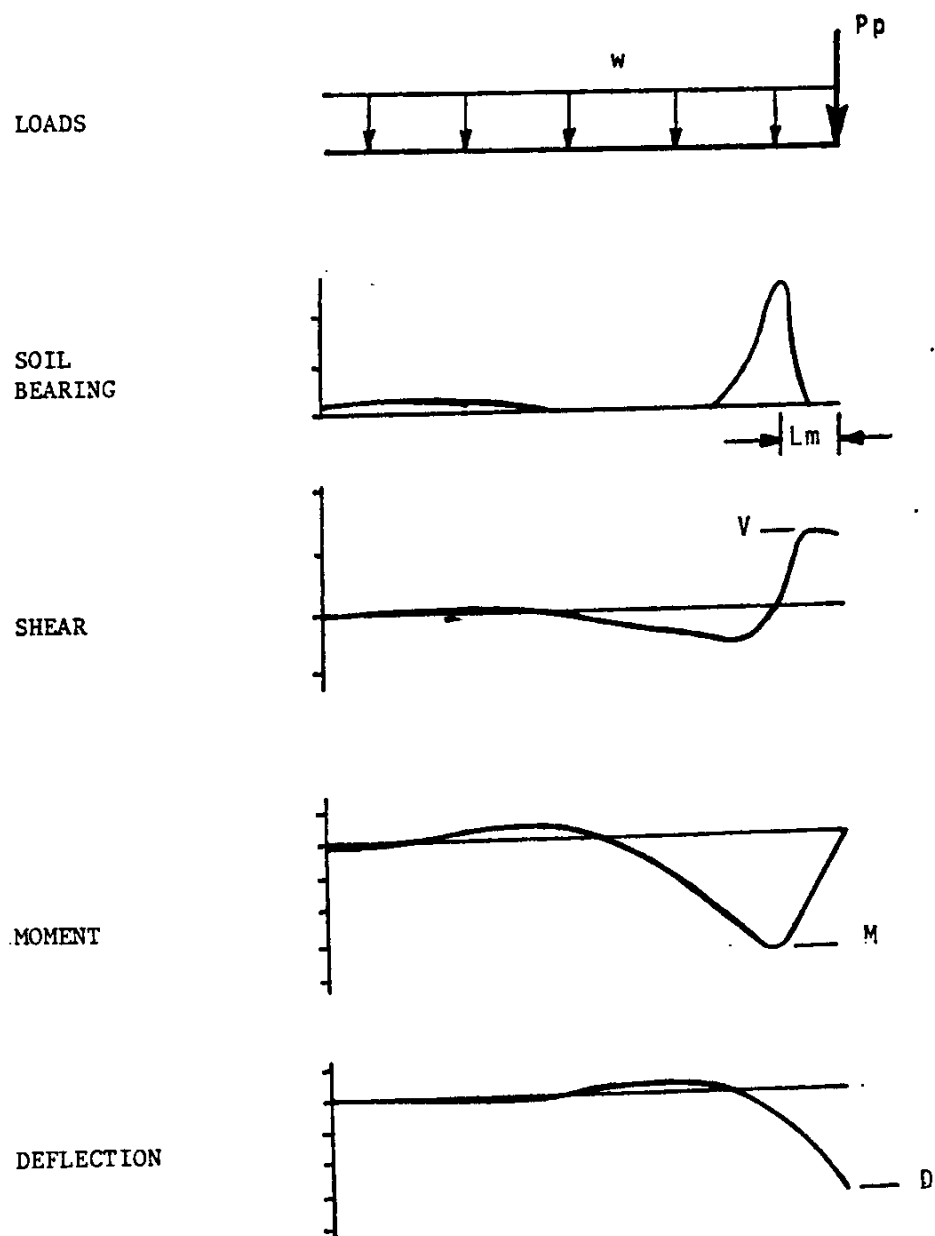
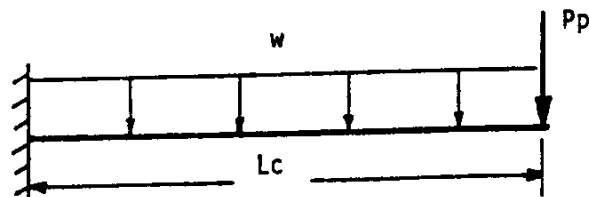
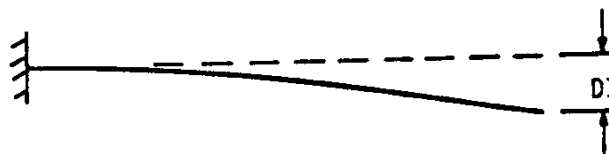
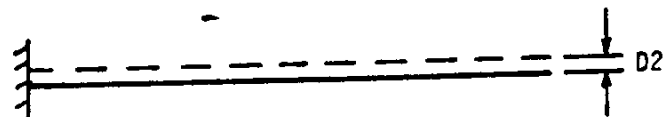
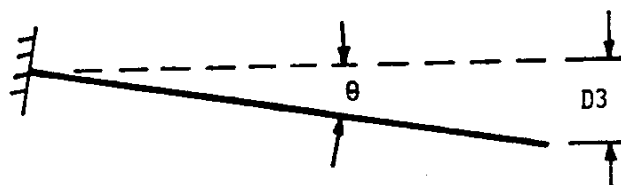
FIGURE A1 - CENTER LIFT BEHAVIOR

FIGURE A2 - CENTER LIFT DEFLECTIONEQUIVALENT  
CANTILEVERCANTILEVER  
BENDINGSUPPORT  
TRANSLATIONSUPPORT  
ROTATION

$$D = D1 + D2 + D3$$

$$D1 + D2 = .11$$

$$D3 = 12 Lc \theta$$

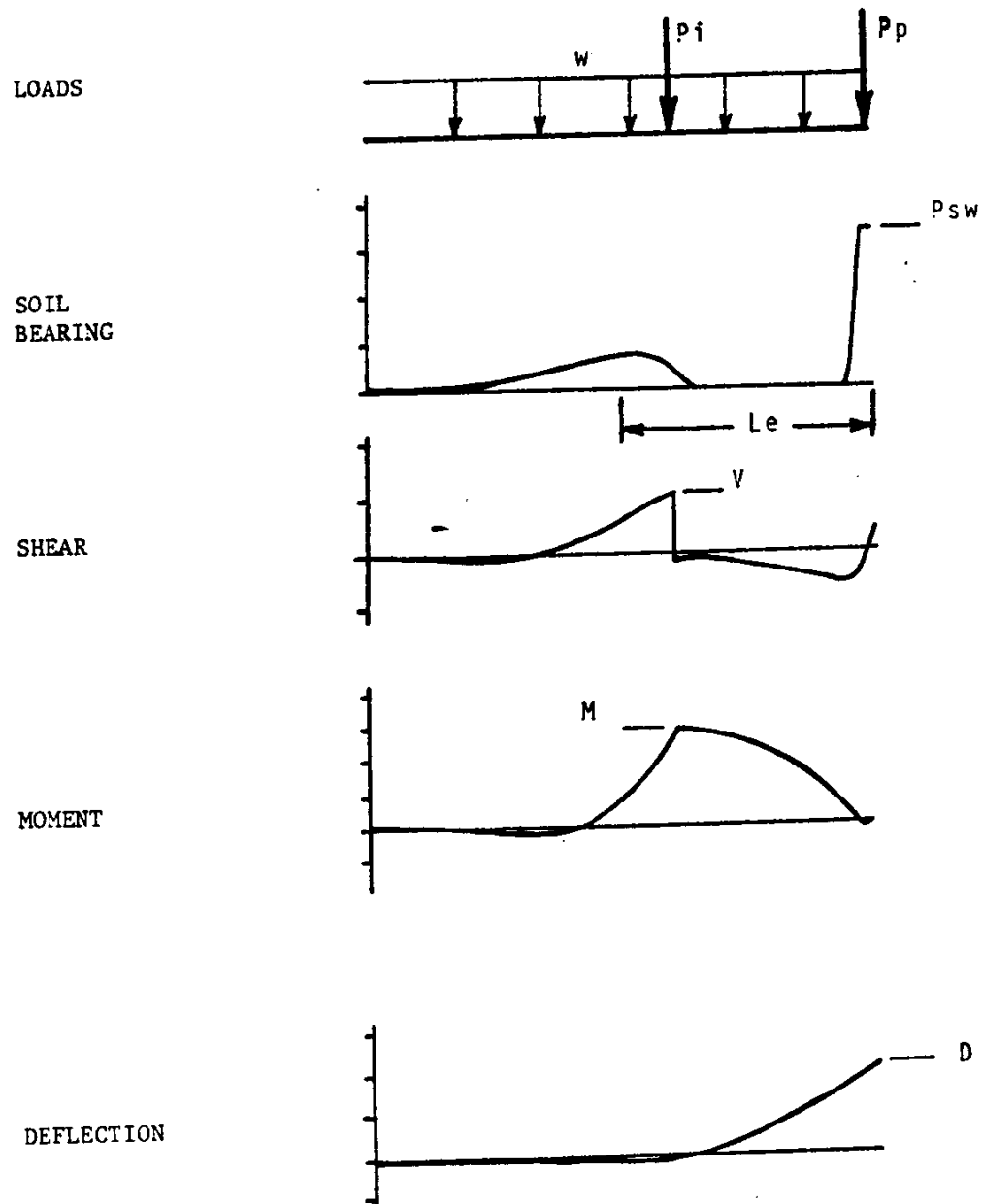
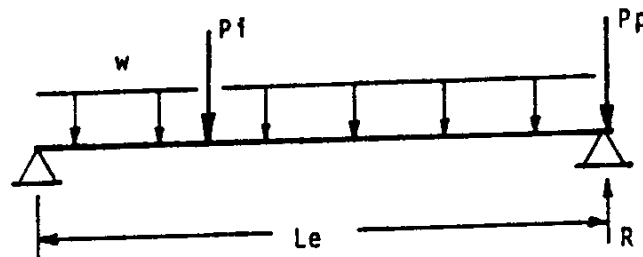
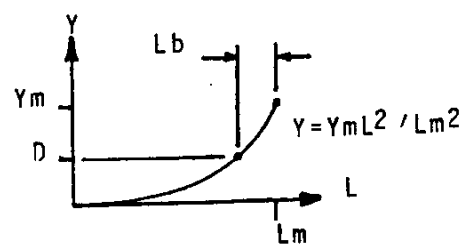
FIGURE A3 - EDGE LIFT BEHAVIOR

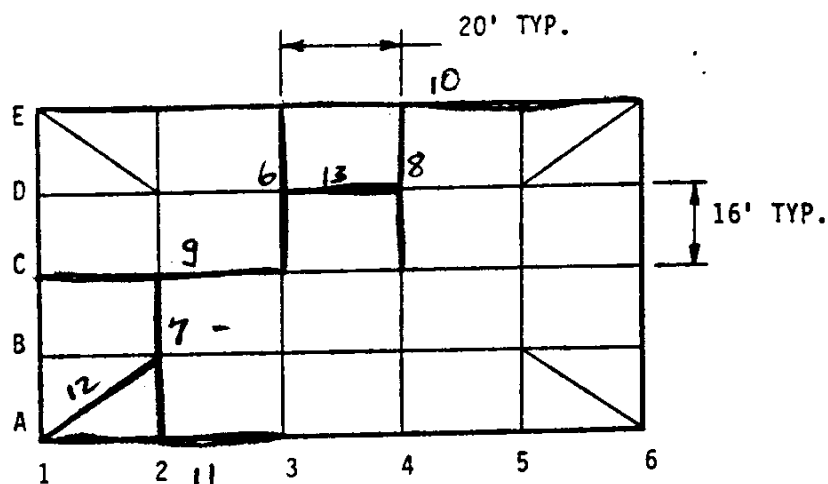
FIGURE A4 - EDGE LIFT DEFLECTIONEQUIVALENT  
SIMPLE BEAMDEFLECTED  
SHAPEBEARING  
PRESSURESOIL  
EDGE  
PROFILE

APPENDIX B - DESIGN EXAMPLE  
(RIBBED MAT DESIGN IN EXPANSIVE SOIL)

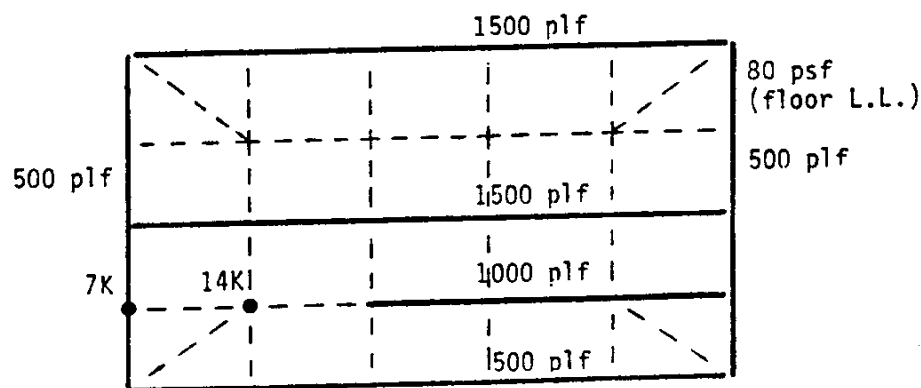
1. SOIL DATA (ref. Part I - 3.3)

$q_a = 2000 \text{ psf}$   
 $P_{sw} = (\text{see page B9})$   
 $k = 100 \text{ pci}$   
 $L_m = 6 \text{ ft}$   
 $Y_m = 1.5 \text{ in for center lift}$   
 $Y_m = 1.0 \text{ in for edge lift}$

2. FOUNDATION PLAN (ref. Part I - 4.3)



3. LOADS



B1

## 4. BEARING DESIGN FOR RIBS (ref. Part I - 4.4)

Maximum wall load (P) = 1500 plf

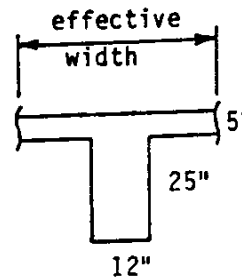
Width  $\geq P/q_a = 1500/2000 = .75$  ft

Use 12 inch wide ribs (minimum)

## 5. INTERIOR RIB PROPERTIES (ref. Appendix A - 2.1)

$E_c = 3,320,000$  psi

(effective flange width  
per ACI 318, section 8.10.2  
For "span length" use  $4L_c$   
for center lift or  $L_e$  for  
edge lift)



Let  $I_r = 36,000$  in<sup>4</sup> for center lift  
 $I_r = 24,000$  in<sup>4</sup> for edge lift  
 (ref. ACI 318, section 9.5.2.3, verify  $I_r$  after  
 calculating M)

$I = I_r/S$  (in<sup>4</sup>/ft):

Rib spacing	16 ft	20 ft
Center lift	2250	1800
Edge lift	1500	1200

## 6. CENTER LIFT DESIGN - RIB E3/C3

## 6.1 Loads (ref. Appendix A - 2.1)

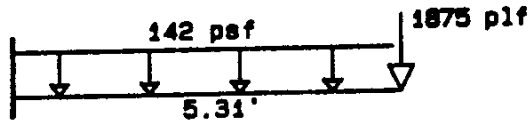
slab weight = 150 pcf x 5/12 ft = 62 psf

$w = DL + LL = 62 + 80 = 142$  psf

rib weight = 150 pcf x 2.5 ft x 1.0 ft = 375 plf

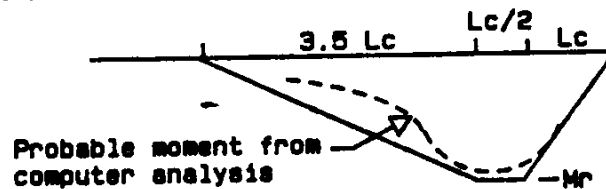
$P_p = \text{rib} + \text{wall} = 375 + 1500 = 1875$  plf

$$L_c = L_o C = 4.7 \times 1.13 = 5.31 \text{ ft}$$



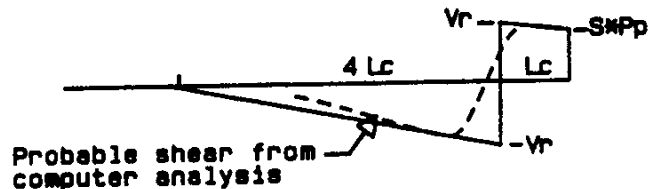
$$M_r = M \times S = 12000 \times 20 = 240,000 \text{ ft-lb/rib}$$

**Design moments:**



$$V_r = V \times S = 2630 \times 20 = 52,600 \text{ lb/rib}$$

Design shears:





## 6.5 Reinforcing in rib (ref. Part I - 3.1.6 and 4.5)

$$A_s = (M_r / a_d) / 1.33$$

$$A_s = 240 / (1.76 \times 28 \times 1.33) = 3.66 \text{ in}^2 \text{ (top)}$$

use 3 #10 bars

$$v = V_r / b d = 52600 / (12 \times 28) = 157 \text{ psi}$$

$$v_c = (1.1 \sqrt{f'_c}) 1.33 = 80 \text{ psi}$$

$$A_v = (v - v_c) b s / (f_s 1.33)$$

$$A_v = (157 - 80) 12 \times 12 / (24000 \times 1.33) = .35 \text{ in}^2 / \text{ft}$$

use #4 stirrups @ 12 in

## 6.6 Deflection (ref. Part II - 3.1.4)

$$\theta = M^{1.4} / 9800 I k^{.5}$$

$$\theta = 12000^{1.4} / (9800 \times 1800 \times 100^{.5}) = .0029 \text{ radians}$$

$$D = .11 + 12 L_c \theta = .11 + 12 \times 5.31 \times .0029 = .29 \text{ in}$$

$$D / 4 L_c = .29 / (4 \times 5.31 \times 12) = 1 / 879 \quad \text{O.K.}$$

1062

## 7. EDGE LIFT DESIGN - RIB A2/C2

## 7.1 Loads

$$w = 142 \text{ psf (same as above)}$$

$$P_p = \text{rib} + \text{wall} = 375 + 500 = 875 \text{ plf}$$

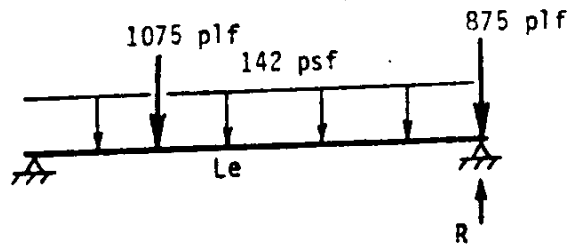
$$P_i = \text{rib} + \text{wall}^* = 375 + 700 = 1075 \text{ plf}$$

\* equivalent wall load = column load / rib spacing

$$14000 / 20 = 700 \text{ plf (ref. Appendix A - 2.4)}$$

$$L_i = 16 \text{ ft}$$

## 7.2 Equivalent simple beam (ref. Appendix A - 3.2.1)



## 7.3 Deflection (ref. Part II - 3.2.2)

$$Le = 7.5 I^{.17} Li^{.37} D^{.12} / w^{.07} Pi^{.11}$$

$$Le = 7.5 \times 1200^{.17} \times 16^{.37} \times D^{.12} / 142^{.07} \times 1075^{.11}$$

$$Le = 22.9 D^{.12}$$

assume  $D = .50$  in (somewhat less than  $Ym = 1.0$  in)

$$Le = 22.9 \times .50^{.12} = 21.1 \text{ ft}$$

$$R = Pp + 1/2 w Le + Pi(Le-Li)/Le$$

$$R = 875 + (142 \times 21.1)/2 + 1075(21.1-16.0)/21.1 = 2633 \text{ plf}$$

from heave/pressure curve (p B9), for  $D=.50$  find  $Psw=2000$

$$Lb = 1.1(R/Psw) = 1.1(2633/2000) = 1.45 \text{ ft}$$

$$D = Ym(Lm-Lb)^2 / Lm^2$$

$$D = 1.0(6.0-1.45)^2 / 6.0^2 = .575 \text{ in} \neq .50 \text{ inch assumed!}$$

assume  $D = .54$  in

$$Le = 22.9 \times .54^{.12} = 21.3 \text{ ft}$$

$$R = Pp + 1/2 w Le + Pi(Le-Li)/Le$$

$$R = 875 + (142 \times 21.3)/2 + 1075(21.3-16.0)/21.3 = 2655 \text{ plf}$$

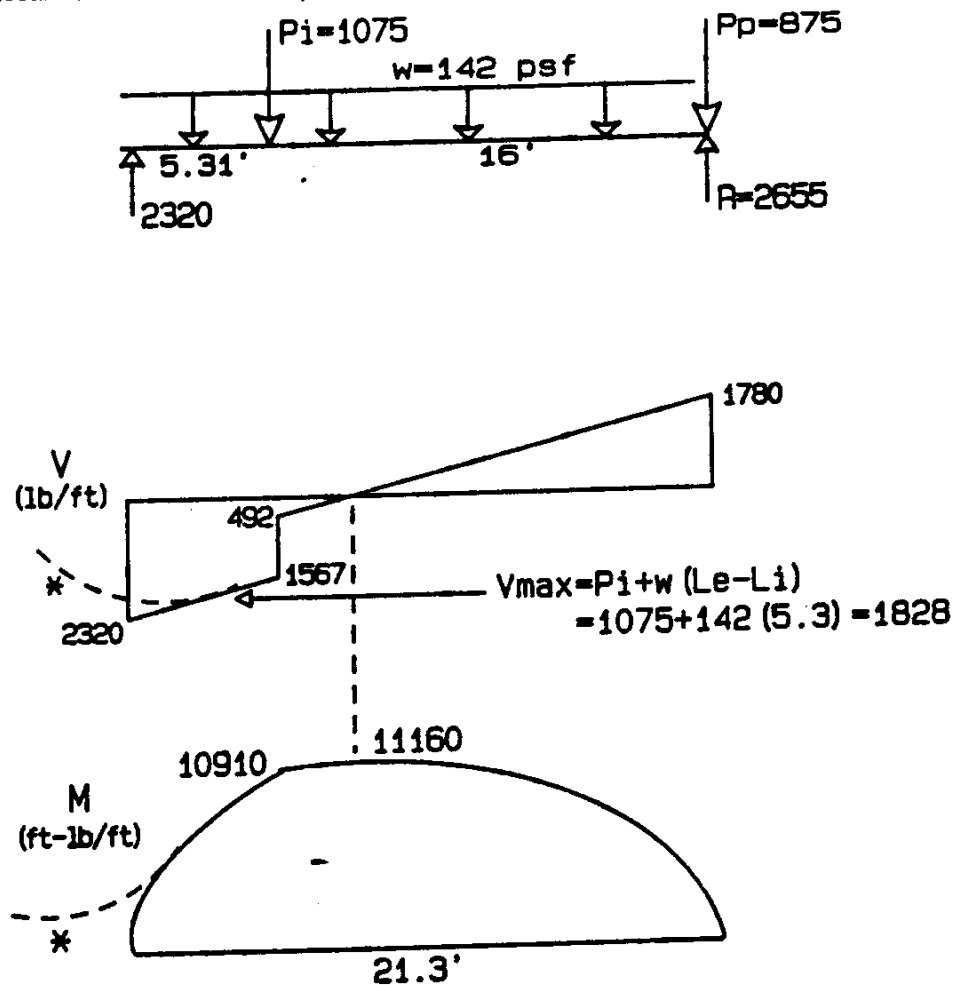
from heave/pressure curve, for  $D=.54$  find  $Psw=1800$  psf

$$Lb = 1.1(R/Psw) = 1.1(2655/1800) = 1.62 \text{ ft}$$

$$D = 1.0(6.0-1.62)^2 / 6.0^2 = .533 \text{ in CONVERGED!}$$

$$D/Le = .54 / (21.3 \times 12) = 1/473 \text{ O.K. for non-brittle walls}$$

## 7.4 Moment and shear (ref. Part II - 3.2.3 and 3.2.4)



\* probable shear and moment from computer analysis, note that calculated  $V=2320$  lb will not occur, due to the effects of distributed support from the soil

## 8. EDGE LIFT DESIGN - RIB E4/C4

## 8.1 Loads

$w = 142$  psf (same as above)

$P_p = 1875$  plf (same as rib E3/C3)

$L_i = 32$  ft (wall along rib C1/C6)

## 8.2 Deflection

since  $L_i > L_e$  use:

$$L_e = 10.5 I^{.17} D^{.12} / w^{.07} \text{ (ref. Part II - 3.2.5)}$$

$$L_e = 10.5 \times 1200^{.17} \times D^{.12} / 142^{.07} = 24.77 D^{.12}$$

assume  $D = .48$  in

$$\text{then } L_e = 24.77 \times .48^{.12} = 22.7 \text{ ft}$$

$$R = P_p + 1/2 w L_e = 1875 + (142 \times 22.7)/2 = 3485 \text{ plf}$$

from heave/pressure curve, for  $D=.48$  find  $P_{sw}=2100$  psf

$$L_b = 1.1(R/P_{sw}) = 1.1(3485/2100) = 1.825 \text{ ft}$$

$$D = Y_m(L_m - L_b)^2 / L_m^2$$

$$D = 1.0(6.0 - 1.825)^2 / 6.0^2 = .484 \text{ inch CONVERGED!}$$

8.3 Find shears and moments by statics, similar to rib A2/C2.

## 9. CENTER LIFT DESIGN - RIB C1/C3

## 9.1 Loads

$$w = \text{slab} + LL + \text{wall}^* = 62 + 80 + 94 = 236 \text{ psf}$$

$$\begin{aligned} * \text{ wall} &= \text{wall load} / \text{rib spacing} = 1500/16 = 94 \text{ psf} \\ &\text{(ref. Appendix A - 2.4)} \end{aligned}$$

$$P_p = \text{rib} + \text{wall} = 375 + 500 = 875 \text{ plf}$$

## 9.2 Equivalent cantilever

$$L_o = 2.3 + .4 L_m = 2.3 + (.4 \times 6) = 4.7 \text{ ft}$$

$$C = .8 Y_m^{.12} I^{.16} / P_p^{.12}$$

$$C = .8 \times 1.5^{.12} \times 2250^{.16} / 875^{.12} = 1.28$$

$$L_c = L_o C = 4.7 \times 1.28 = 6.02 \text{ ft}$$

## 9.3 Moment

$$M = P_p L_c + 1/2 w L_c^2$$

$$M = 875 \times 6.02 + (236 \times 6.02^2)/2 = 9544 \text{ ft-lb/ft}$$

$$M_r = M \times S = 9544 \times 16 = 153,000 \text{ ft-lb/rib}$$

## 9.4 Shear

$$V = P_p + w L_c = 875 + (236 \times 6.02) = 2296 \text{ plf}$$

$$V_r = V \times S = 2296 \times 16 = 36,700 \text{ lb/rib}$$

## 9.5 Deflection

$$\theta = M^{1.4} / 9800 I k^{.5}$$

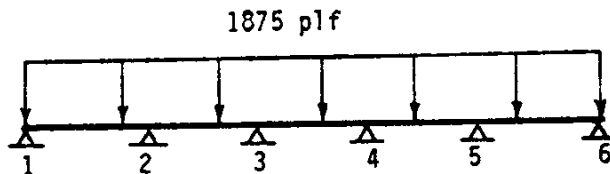
$$\theta = 9544^{1.4} / 9800 \times 2250 \times 100^{.5} = .0017 \text{ radian}$$

$$D = .11 + 12 L_c \theta = .11 + (12 \times 6.02 \times .0017) = .23 \text{ in}$$

## 10. CENTER LIFT DESIGN - PERIMETER RIB E1/E6 (ref. Part II-3.3.1)

## 10.1 Span between transverse ribs

$$P_p = 1875 \text{ plf (from calculations for rib E3/C3)}$$

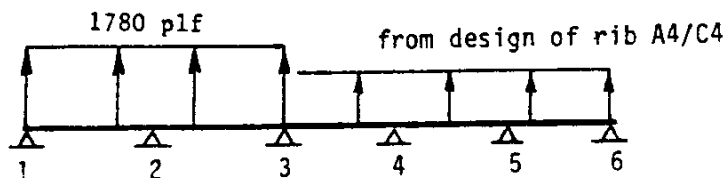


## 10.2 Analyze by conventional methods

## 11. EDGE LIFT DESIGN - PERIMETER RIB A1/A3 (ref. Part II - 3.3.2)

11.1 Span between transverse ribs for net upward force  
(from calculations on rib A2/C2)

$$R - P_p = 2655 - 875 = 1780 \text{ plf (upward)}$$



## 11.2 Analyze by conventional methods

## 12. CENTER LIFT DESIGN - DIAGONAL RIB A1/B2 (ref. Part II - 3.4)

12.1 Provide the larger shear and moment capacity of rib B1/B2 or rib A2/B2.

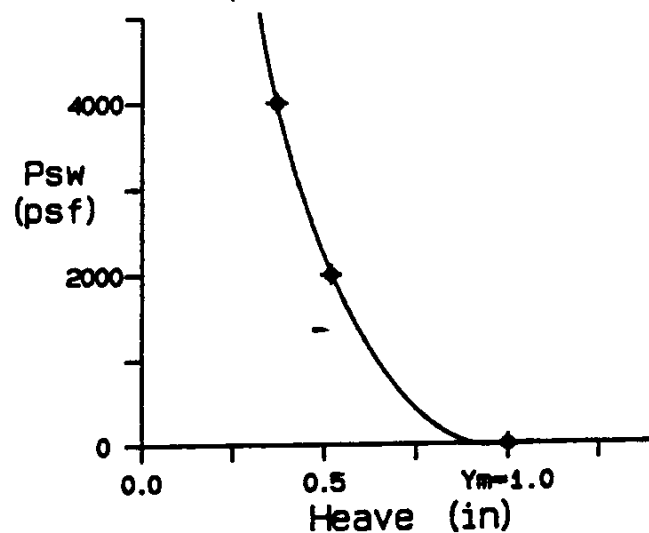
## 13. RIB D3/D4 (ref. Part I - 4.5)

13.1 Interior rib with no wall or column loads

$$A_s \geq .0033 A_g = .0033 \times 12 \times 30 = 1.20 \text{ in}^2 \text{ (top and bot.)}$$

This is the typical minimum reinforcement for the full length of all ribs.

## 14. HEAVE VERSUS SWELL PRESSURE CURVE (ref. Appendix A - 2.1)



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
SOUTHWESTERN DIVISION, CORPS OF ENGINEERS  
1114 COMMERCE STREET  
DALLAS, TEXAS 75242-0216

16 APR 1987

SWDED-G

SUBJECT: Criteria for Developing Geotechnical Design Parameter  
for SWD Ribbed Mat Design Methodology

Commander, Albuquerque District, ATTN: SWAED-TA  
Commander, Fort Worth District, ATTN: SWFED-F  
Commander, Galveston District, ATTN: SWGED-G  
Commander, Little Rock District, ATTN: SWLED-G  
Commander, Tulsa District, ATTN: SWTED-G

1. Reference is made to criteria letter SWDED-TS/G dated 23 December 1986, subject "Design Criteria for Ribbed Mat Foundation".

2. The above reference criteria letter require certain geotechnical parameters be furnished in the Foundation Design Analysis when a ribbed mat slab foundation is recommended in expansive soil areas. Enclosure 1, for addressees only, provides guidance for development of these parameters. These procedures were developed by the Ft. Worth District with review in the Southwestern Division. Questions and/or comments should be directed to either Mr. A.L. Branch, FTS 334-2117 or Mr. Jack Fletcher, FTS 729-6365.

FOR THE COMMANDER:

Encl

*William D. Denys*  
for ARTHUR D. DENYS, P.E.  
Chief, Engineering Division

XV

7-12

40 YEARS OF SERVICE

THE SOUTHWEST

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DEVELOPMENT OF GEOTECHNICAL DESIGN  
PARAMETERS FOR RIBBED MAT FOUNDATIONS

1. REFERENCE.

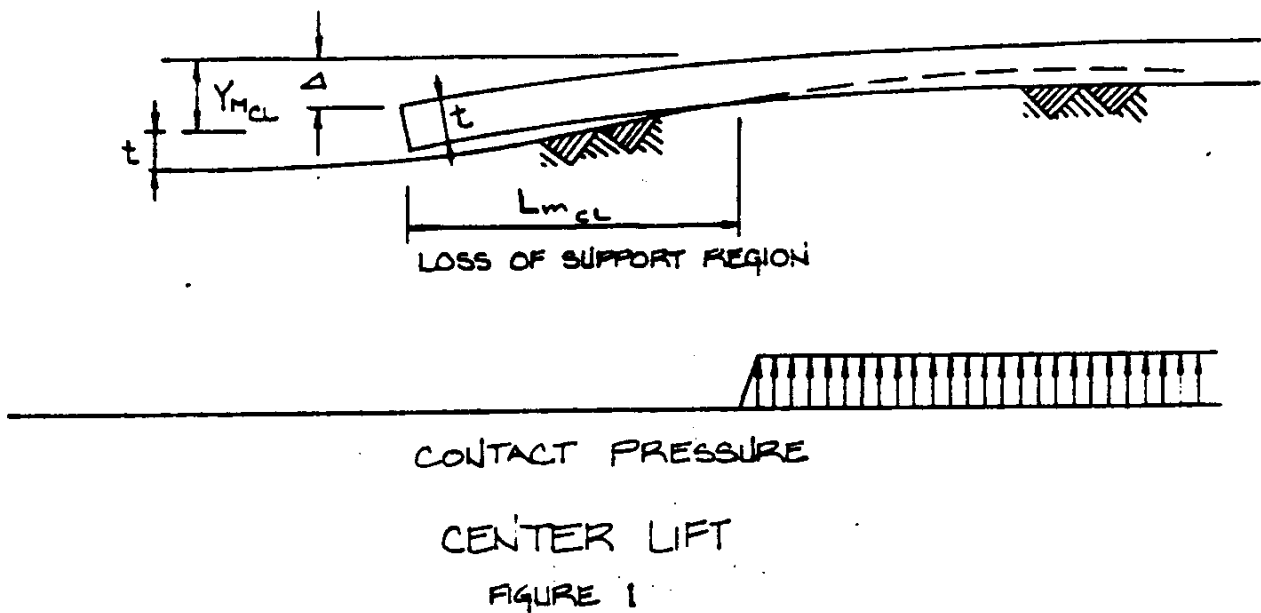
1.1 SWDED-TS/G, Design Criteria for Ribbed Mat Foundations, dated 23 Dec 86.

1.2 TM 5-818-7. Foundations in Expansive Soils, Corps of Engineers, 1983.

2. BACKGROUND. The recently developed structural design methodology (reference 1) models the interaction of a ribbed mat slab on an expansive subgrade for purposes of structural design. This method appears equally suited to stiffened mat systems such as flat mats, modified flat mats and inverted ribbed mats. Utilization of the methodology requires the expansion and refinement of the geotechnical design parameters furnished in the foundation design analysis. The purpose of this report is to (1) identify and (2) provide a rational method of determining these parameters.

3. SOIL-STRUCTURE INTERACTION MODES. Two heave induced deformation conditions appropriate for ribbed mat slab structural analysis are (a) center lift and (b) edge lift.

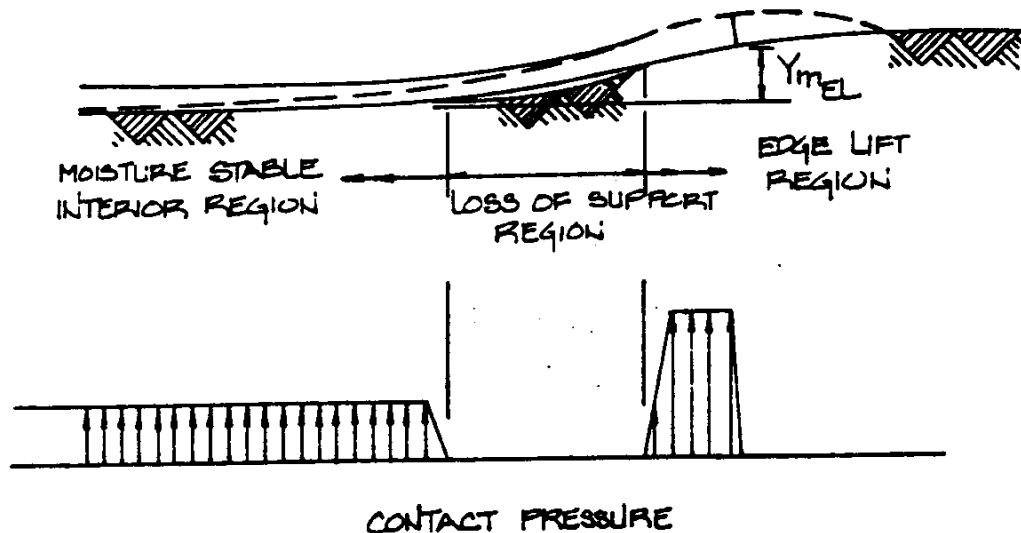
3.1 CENTER LIFT. Center lift considers doming of the foundation in the interior region of a slab on grade differentially to the perimeter region as depicted on figure 1. This may be caused either by drying of the expansive subgrade around the perimeter beam or by wetting of the dry expansive subgrade in the interior region. Perimeter drying results from (1) below average precipitation and/or (2) reduced or no landscape watering and/or



(3) removal of old paving or hard stand. Interior wetting results from (1) disruption of the site moisture equilibrium by "capping" the site with the relatively impervious slab or by removal of thick brush or trees from the site (thus eliminating evapo-transportation) and/or (2) leaky inservice or abandoned utilities. Loss of support along perimeter and first interior transverse stiffener beam results if (1) the magnitude of center lift heave is large enough and (2) the beams are sufficiently rigid to cantilever from the supported interior region.

3.2 EDGE LIFT. Edge lift involves more complex soil-structure interactions than does center lift. In edge lift, the structure is supported by heaving subgrade in the perimeter region and in the relatively moisture stable interior region. Loss of support develops when (1) the edge lift heave deformation

is large enough and (2) the spanning beam is sufficiently rigid. Edge lift mode is depicted on figure 2.



EDGE LIFT  
FIGURE 2

Soil-structure interaction within the interior supported region is reasonably represented as a beam on non-linear subgrade. Soil-structure interaction in the perimeter region is somewhat more complex because the soil deflects under the structural load as a beam on non-linear subgrade, but also the swelling soil either loads and/or deflects the beam upward. To further complicate matters, the amount of edge lift heave and the soil-beam interface pressure are interrelated and unique for each specific site. Background parameter studies for reference 1 indicate that the structural analyses are particularly sensitive

to edge lift parameters (edge lift heave magnitude and limiting beam-soil interface pressure). For example, large values for these may cause the solution to either fail to converge or indicate that the beam must be very deep and/or very heavily reinforced. While site conditions may sometimes dictate massive, very rigid stiffener beams, this is not generally the case. Generally, edge lift heave of less than 1.0 to 1.5 inches used in the design method given in reference 1 produce reasonable, constructable beams.

#### 4. DETERMINATION OF CENTER LIFT AND EDGE LIFT PARAMETERS FOR STRUCTURAL DESIGN.

4.1 CENTER LIFT - Center lift parameters to be provided in the foundation design analysis includes (1) modulus of subgrade reaction ( $K_1$ ), (2) design allowable bearing for beams ( $q_{all}$ ), (3) magnitude of center lift ( $Y_{mcl}$ ) and (4) loss of support distance around the perimeter ( $L_{mcl}$ ).

4.1.1 MODULUS OF SUBGRADE REACTION - The modulus of subgrade reaction should be taken as  $K_1 = 200 \text{ pci}$  for beams up to 12 inches wide bearing on compacted, nonexpansive fill. Higher values may be justified for granular nonexpansive fills consisting of gravel, crushed rock or limestone screenings or for cement stabilized materials if these materials extend significantly ( $D \geq 3B$ ) below the stiffener beam of width  $B$ . The foundation design analysis should direct that  $K_1$  values be factored to account for width effects such that  $K_{design} = K_1/B$ , where  $B$  is the effective beam width in feet for soil structure interaction. Note that the resultant effective beam width may include a significant width of the slab and is therefore

significantly greater than actual beam width. Studies indicate that significant load distribution occurs over an "effective" width of approximately five. It should be noted that structural design calculations are not sensitive to K value.

4.1.2 DESIGN ALLOWABLE BEARING. A design allowable bearing value ( $q_{all}$ ) has historically been assigned for sizing of stiffener beams, perimeter beams and enlarged beam intersections beneath columns. Values are typically given considering the beam to be a continuous strip footing or the beam intersection to be a spot footing (carrying either line or concentrated loads, respectively). The allowable bearing value is typically developed based on the average strength of engineered fill at shallow depth with a factor of safety of not less than 3.0. Design loads typically include full dead load plus half live load. The purpose in sizing the beams and beam intersections for this design allowable is to provide uniform contact pressures at the beam-soil interface therefore limiting inservice differential settlement. The assumptions of minimal load sharing between the slab and beams, ample safety factor on the fill strength, and minimum beam widths specified in the SWD EIM combine to limit the mobilized soil strains to low levels. This leads to very small structurally induced deflections given uniform, nominal fill depths. Actual values assigned for design bearing allowables have seldom exceeded  $q_{all} = 2.0$  KSF although values as high as 3.0 KSF have been assigned in limited cases where required and justifiable. Seldom are there structural requirements for larger allowables bearing values since specified minimum beam widths generally govern.

4.1.3 MAGNITUDE OF CENTER LIFT HEAVE POTENTIAL. - The magnitude of center lift heave potential ( $Y_{mcl}$ ) given in the foundation design analysis should be the residual heave potential at the site. The value of  $Y_{mcl}$  should include effects due to subgrade removal and replacement criteria, any surcharge effects due to fill above original subgrade and the weight of the proposed structure. Maximum design value for center lift potential should not exceed 1.5 inches. Where attainable with reasonable removal/replacement depths ( $\leq 36$  inches), it is desirable to limit  $Y_{mcl}$  to not more than 1.0 inch, which is well within the "tolerable" inservice deformation range of most structures. Minimum remove/replace depth should be taken to the bottom elevation of the ribbed mat slab beams.

function  
of  
Anticipated  
Loads

The heave potential is determined by three soil parameters: the coefficient of swell ( $C_s$ ), depth of active zone ( $X_a$ ) and expansion pressure ( $P_{exp}$ ).

Caution should be used in selecting coefficient of swell ( $C_s$ ) values for heave analyses since swell pressure test results significantly underestimate  $C_s$  values compared to controlled expansion-consolidation-rebound tests. Additionally, both test methods tend to give low  $C_s$  values since most rebound time curves are terminated well before primary swell is completed.

★ An appropriate design value of the depth of the active zone ( $X_a$ ) typically lies between the present depth to the stable relative moisture content (estimated by observing the relationship of moisture content to the plastic limit) and the maximum depth observed, such as the maximum depth of weathering. Typical  $X_a$  values for the central and north Texas regions and

central Oklahoma region appear to vary from about 10 to 15 feet. These values have been estimated for (1) regression heave analyses for distressed structures and (2) depth of moisture variation versus approximate return/duration interval studies. Values smaller than 14 feet may be applicable in specific cases such as where the active zone is the distance between the structural foundation element or slab on grade and a perched water table; a condition common in these regions.

Center lift heave analyses should consider "saturated" conditions to a depth of  $X_a$ . If a nominal remove/replace depth and saturated subgrade assumptions indicate unreasonable residual heave potential, consider increasing the depth of remove/replace and/or recommending a more defensive design to prevent saturation of the subgrade.

Expansion pressures should be developed versus depth using small depth intervals. These should be developed from laboratory data for the site. Additionally, these may be supplemented using proper correlations with nearby, preferably adjacent sites.

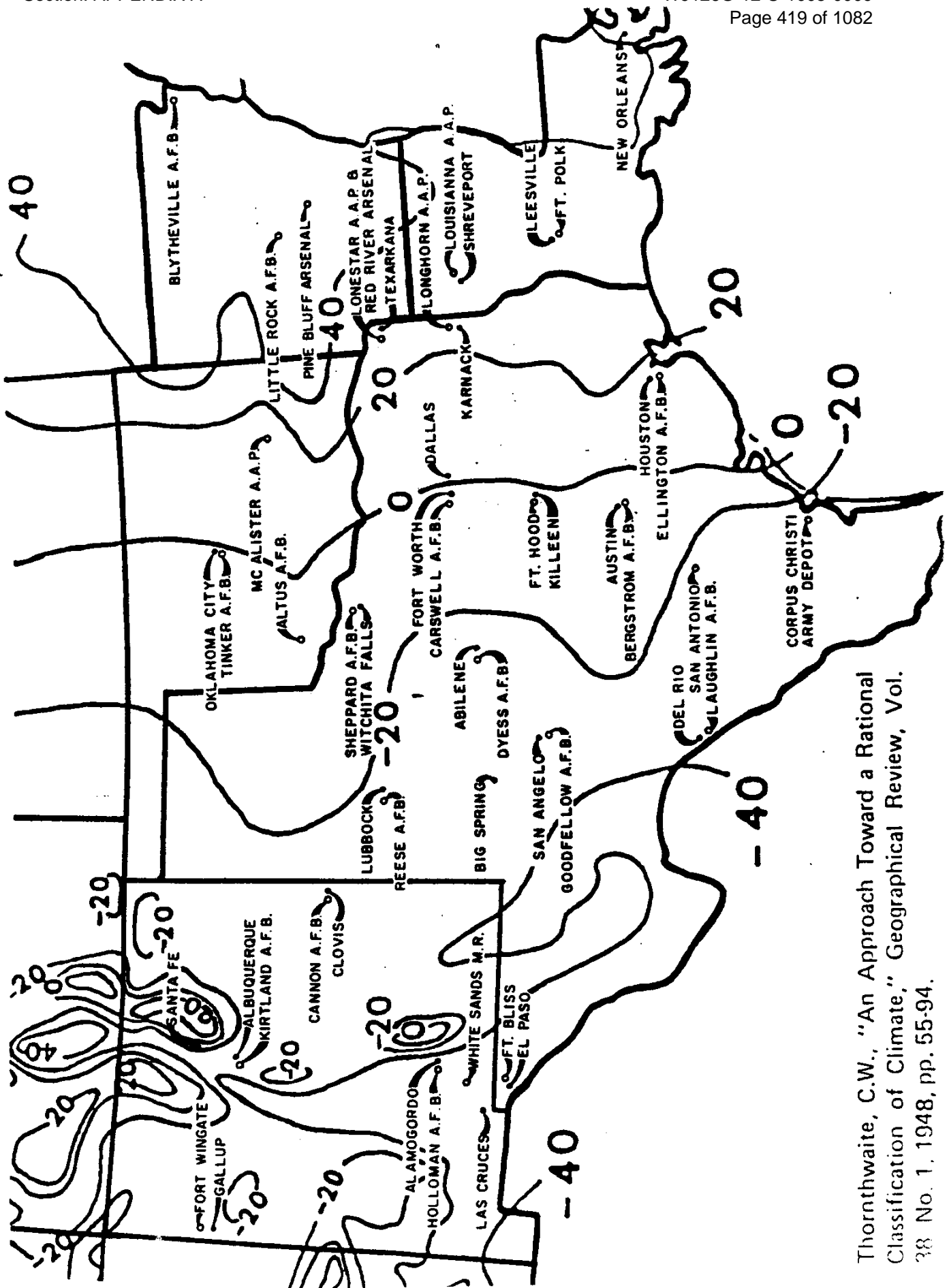
4.1.4 EDGE MOISTURE VARIATION DISTANCE. The edge moisture variation distance ( $L_{mcl}$ ) may control the design of interior stiffener beams which are adjacent to the perimeter. The maximum moments and shear are induced in the transverse beams when these elements cantilever free of foundation support from the interior supported region to the outside of the perimeter beam. The length of cantilver is largely controlled by the value of  $L_{mcl}$ . SWD adopted this concept from Post-Tensioning Institute (PTI) guidelines, originally developed for lightly loaded flexible mats in the late 1970's and early 1980's. Standard practice in the

San Antonio area has been to assign upper or near upper bound values from TMI for design  $L_{mcl}$  values. At least two aspects of designs probably tend to moderate the actual edge moisture variation distance experienced; these being (1) relatively deep perimeter beams which act as a physical barrier and (2) the non-expansive fill blanket which tends to make changes in moisture content (and therefore any resultant heave or shrinkage) more uniform and provide a surcharge effect as well. Other factors, however, tend to offset these moderating effects. These include very short return interval of edge moisture variation events presented in TMI (reported by some sources to range from 1 to 2 years). Typical project design life of projects exceeds 20 or 30 years and, since we're still using many World War II facilities, it may well exceed 50 years. Estimated edge moisture variation values considering a 100 percent probability of experiencing a 20 to 30-year return interval event may well be twice typical TMI values.

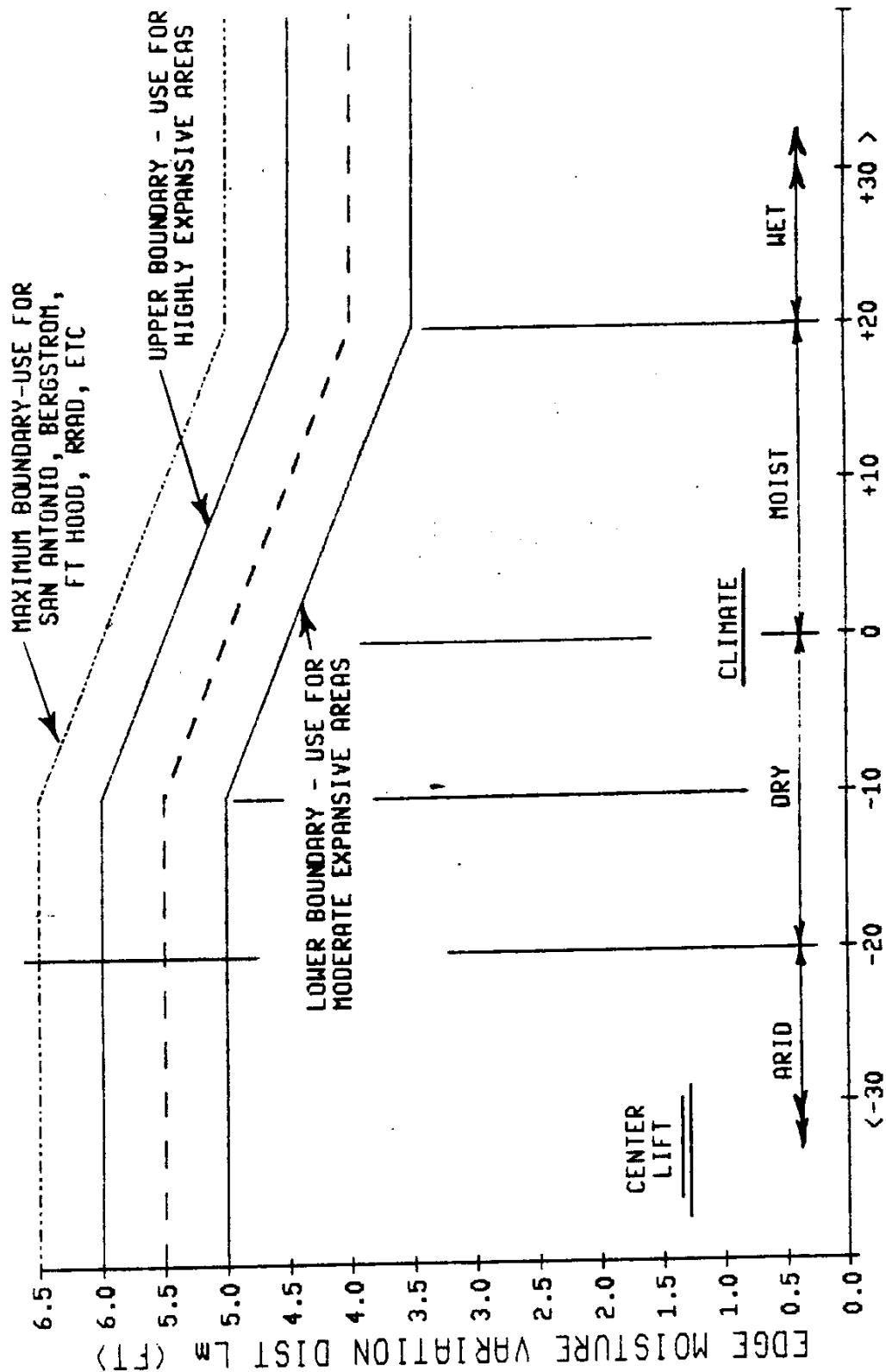
Based on a subjective combination of all factors, it is suggested that  $L_{mcl}$  be taken as the edge moisture variation distance determined using figures 3 and 4. These values should be modified, either up or down, based on site specific soils investigations and engineering judgement.

4.2 EDGE LIFT - Edge lift parameters to be provided in the foundation design analysis include (1) modulus of subgrade reaction ( $K_1$ ), (2) magnitude of edge lift heave ( $Y_{mcl}$ ), (3) limiting soil-beam interface pressure ( $P_{sw}$ ) for that portion of the beam being acted on by the heaving subgrade and (4) a value for edge moisture variation distance ( $L_{mcl}$ ).





Thornthwaite, C.W., "An Approach Toward a Rational Classification of Climate," Geographical Review, Vol. 28 No. 1, 1948, pp. 55-94.



APPROXIMATE RELATIONSHIP BETWEEN THORNTWHAITE INDEX AND MOISTURE VARIATION DISTANCE

FIGURE 4

4.2.1 MODULUS OF SUBGRADE REACTION. - Values given for center lift are considered appropriate for edge lift also.  $K_1 = 200 \text{ pci}$

4.2.2 SOIL-BEAM INTERFACE PRESSURE. Discussion of both limiting soil-beam interface pressure and magnitude of edge lift heave parameters ( $P_{sw}$  and  $Y_{mL}$ ) are best handled concurrently since both are intimately related and the analysis necessary for solution determines both simultaneously.

The area of soil-beam contact in the swelling perimeter region involves a somewhat complex soil-structure interaction situation. As edge lift develops and loss of support occurs between the perimeter and interior regions, the heaving soil may well exert a pressure on the stiffener beams well in excess of typical design interface pressures ( $q_{all}$ ). As the soil column swells and lifts the overlying beam, the soil-beam contact area increases toward the interior region to accommodate the greater structural reaction.

The soil-structure interaction in the edge lift region can be visualized as a three-component system; (1) a structural element (a beam or mat strip), (2) an element of nonexpansive fill beneath the structural element plus that piece of the expansive subgrade restrained against heave by the weight of the overlying fill and the stresses induced beneath the structural element, and (3) the heaving column of soil to a depth of  $X_a$  beneath the bottom of the nonexpansive fill blanket (figure 5).

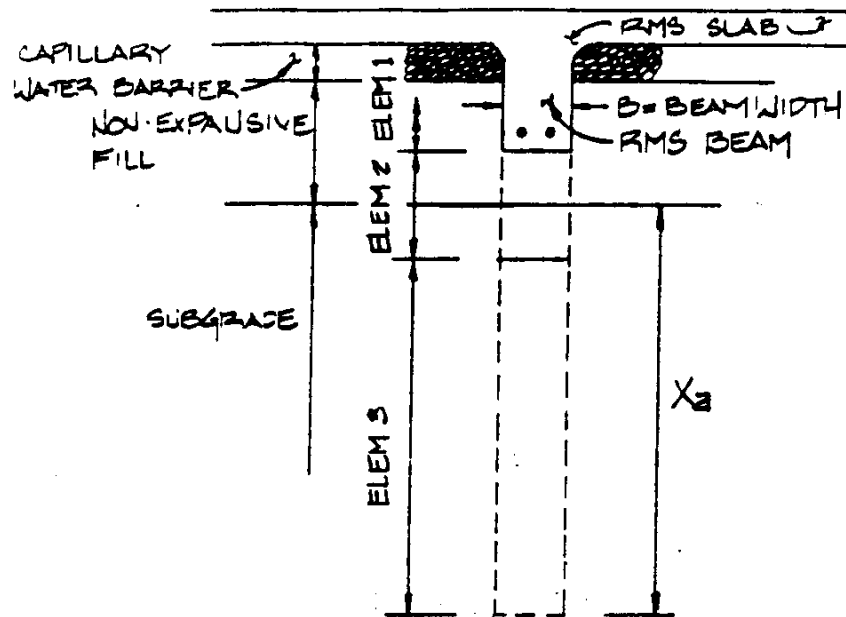


FIGURE 3

The load-deformation relationship of element 1 interacting with element 2 can be represented by a P-Y curve shown in figure 6.

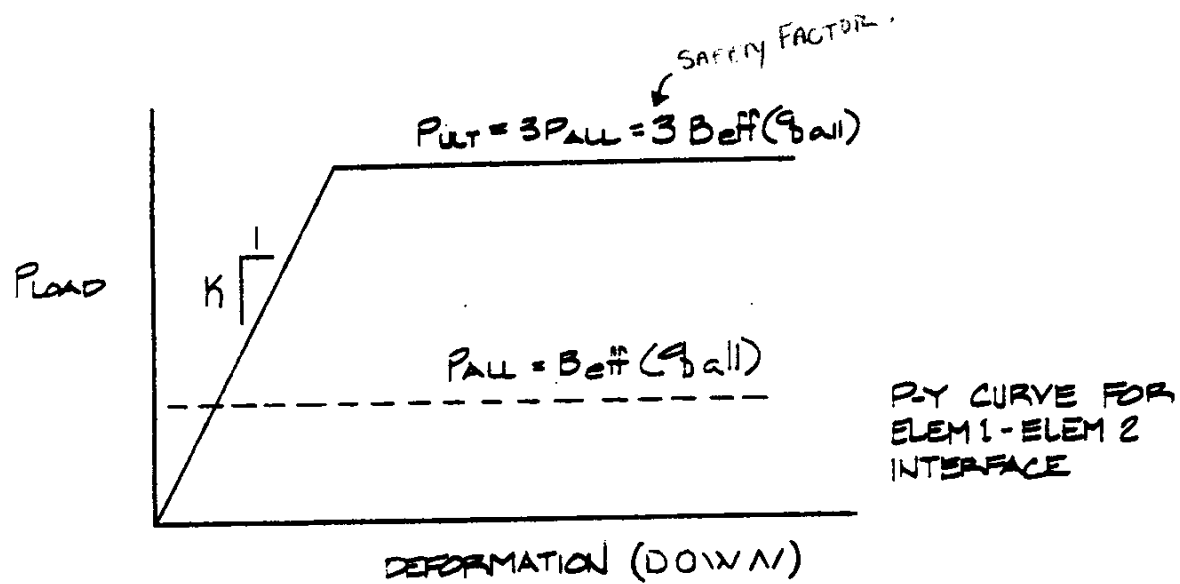
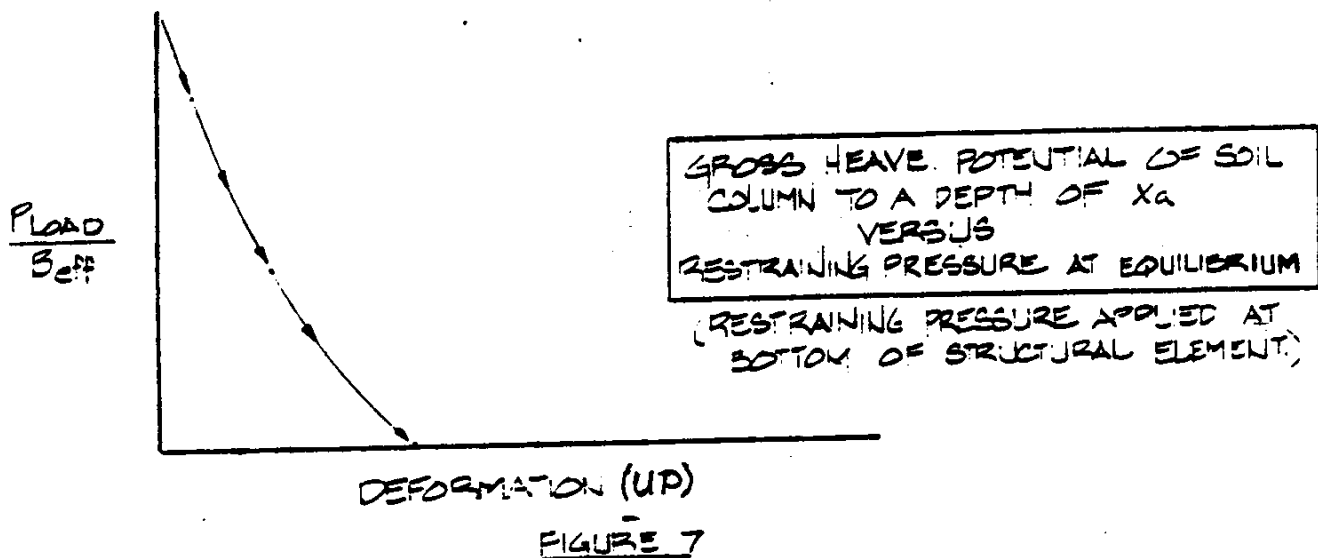


FIGURE 6

The load-deformation relationship of element 3 interacting with elements 1 and 2 in the column immediately below the beam as shown on figure 7. The plot consists of the net heave potential of the swelling soil column versus those forces resisting the tendency to swell, taken at the base of the structural beam.



These relationships can be added algebraically to produce a composite p-y curve which can be easily utilized by available soil-structure interaction programs for structural analysis. Since such analysis is within the purview of the structural engineer, the geotechnical engineer need only furnish the pressure heave relationship in useable form in the Foundation Design Analysis. It is suggested that this information be provided in a tabulated format giving coordinates for at least three points. These minimum three points should be the  $P_{sw}$  and  $Y_{mbl}$  coordinates for (1) pressure equal to  $P_{ult}$ , (2) pressure equal to  $P_{all}$  and (3) pressure equal to zero.

$P_{ult} = F_s \times P_{allow}$

4.2.3 EDGE MOISTURE VARIATION DISTANCE. Edge moisture variation distance ( $L_{m\&L}$ ) appropriate for edge lift analysis may be taken from the TMI chart given in figure 8.

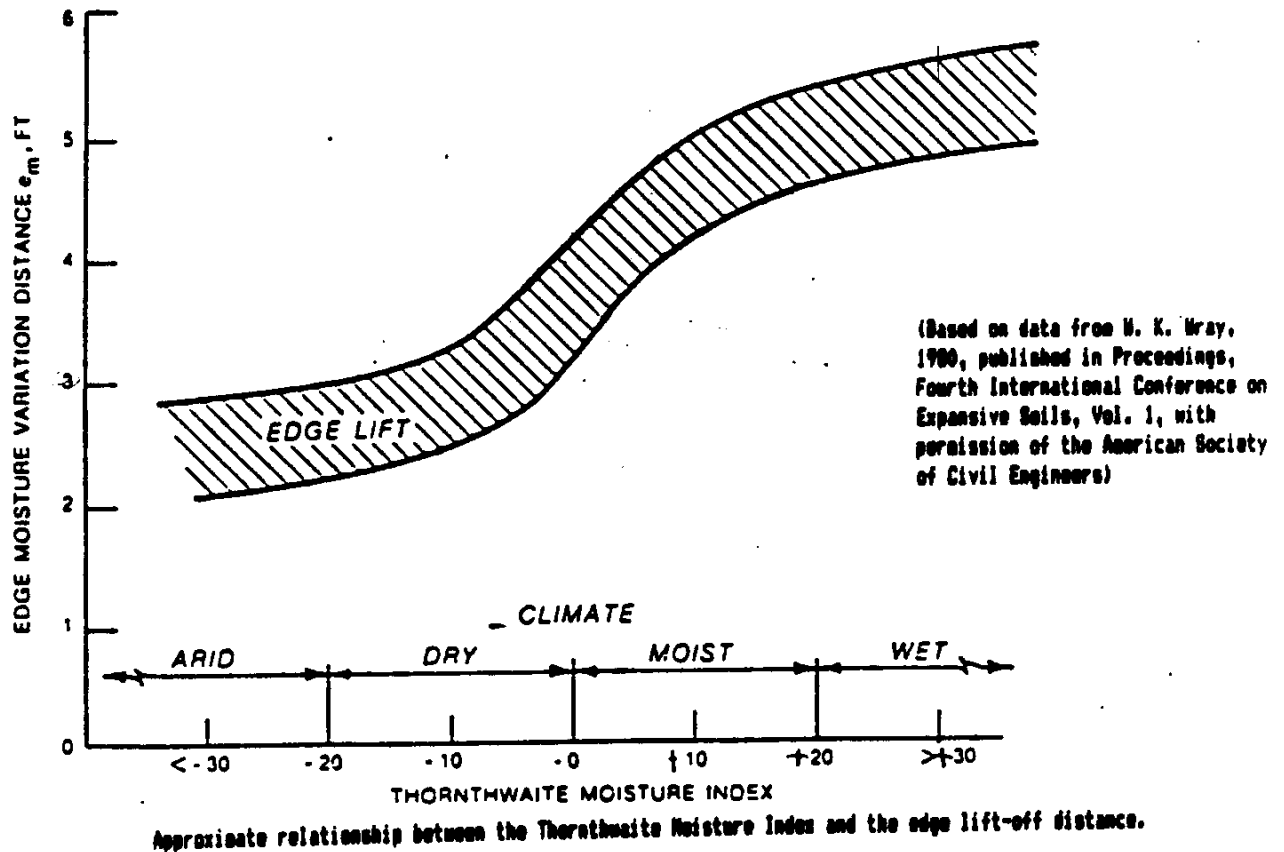


FIGURE 8

The TMI values represent approximate environmentally induced events. As a result, upper bound values should be selected for design. It is recommended, however, that average values be used for all SWD projects. Additionally, recommendations should be made in the foundation design analysis to limit the potential for developing "hot spots" due to long term sources of free water around the building perimeter.

*function of the type of bldg, ie, Brick Strucc or Not*

4.3 Certain structure-site situations may well warrant deleting edge lift analyses as follows:

4.3.1 Where the proposed structure is a pre-engineered metal building without interior masonry walls or heavy interior dead or permanent live loads.

4.3.2 Where defensive design efforts have been incorporated and reasonable confidence exists that these will be constructed and maintained as intended.

4.3.3 Where minor architectural distress (such as cracking of masonry walls, plaster walls, tiled surfaces) is not likely to cause undue user concern or raise inservice maintenance requirements significantly.

## 5. APPENDIX A

5.1 EXAMPLE PROBLEM. An example problem is provided in Appendix A.

**APPENDIX A**



**EXAMPLE PROBLEM**

1. **Required.** - Develop geotechnical parameters for the structural design of a ribbed mat slab given the following:

a. **Proposed Structure.** - Office/Administration type structure located in San Antonio, Texas, 60X150 feet in plan. The structure is to consist of double wythe masonry (face brick over CMU) load bearing exterior walls and isolated interior columns at 20 ft. centers.

b. **Proposed Site.** - One acre, minimal topographic relief, site covered with mesquite trees.

c. **Subsurface Conditions.** - Drilling program (5 borings) indicates the foundation materials consist of (1) a surface stratum of high plasticity clay grading into medium plasticity clay with depth to a total thickness of 14 feet, (2) a water bearing sand and gravel stratum from 1 to 7 feet thick overlying, (3) an expansive clay shale formation.

d. **Summary Laboratory Test Data.** -

Stratum	Depth (ft)	USCS	$\bar{W}_o$ (%)	$\alpha$ (pcf)	LL	PI	$P_{exp}$ (tsf) (net)	$C_s$	$C_c$	$C_u$ (ts)
1	0-4	CH	25	105	65	45	0.8 -1.0	0.06	0.02	0.
2	4-14	CL	14	108	44	30	0.6	0.06	0.18	0.
3	14-20	GC	6	-	25	12	0	-	-	50 B/
4	20 plus	Wea. Clay Shale	22	110	70	52	2.0	0.09	0.22	1.

2. Determine Parameters Required for Center Lift Analysis:

a. Modulus of Subgrade Reaction ( $K_1$ ). - Mat slab will be founded on nonexpansive fill, therefore it is reasonable to assign a value of  $K_1 = 200$  PCI. The structural engineer should factor this value based on effective beam width such that  $K_{design} = K_1 (1ft/B_{eff}, ft)$ .

b. Design Bearing Allowable ( $q_{all}$ ). - Since beams will be supported on nonexpansive fill and the building loads will range from light to moderate, it appears that a design bearing allowable of  $q_{all} = 2.0$  KSF is appropriate.

c. Magnitude of Center Lift Heave Potential ( $Y_{acl}$ ). -

(a) Calculate site heave potential

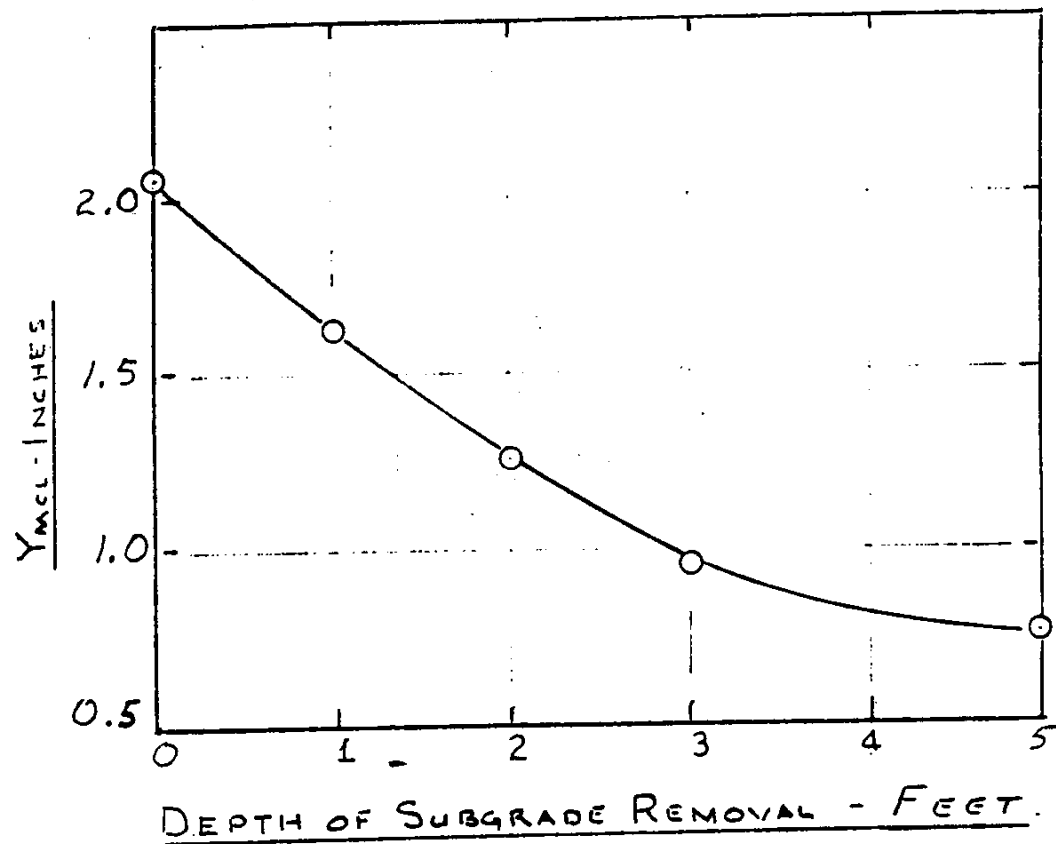
Given:  $C_s = 0.06$ ,  $e_o = 0.60$ ,  $P_o$  = effective overburden pressure,  $P_{exp}$  = gross swell pressure,  $P_f$  = effective pressure resisting heave beneath mat including  $P_o$ , {surcharge due to fill and structural dead load,  $h_u$  = heave for soil layer  $h$  inches thick, and an  $X_a = 10$  feet.

$$C_s = .06$$

$$e_o = .60$$

z (ft)	z (ft)	P <sub>o</sub> (tsf)	P <sub>exp</sub> (tsf)	P <sub>r</sub> (tsf)	h (in)	h <sub>r</sub> = $\frac{C_{sh}}{1 + e_o \log_{10} \frac{P_{exp}}{P_r}}$ (inches)	h <sub>r</sub> (bottom to top) (inches)
0-1	0.5	0.03	1.0	$\frac{.07 + .03}{.07 + .1}$ 0.1	12	0.45	2.07
1-2	1.5	0.1	1.0	0.17	12	0.35	1.62
2-3	2.5	0.17	1.1	$\frac{.07 + .17}{.07 + .17}$ 0.24	12	0.30	1.27
3-4	3.5	0.23	0.8	0.3	12	0.19	0.97
4-6	5	0.33	0.9	0.4	24	0.31	0.78
6-8	7	0.46	1.0	0.53	24	0.25	0.47
8-10	9	0.6	1.2	0.67	24	0.22	0.22
10-12	11	0.73	1.35	0.8	24	0.2	N/A
12-14	13	0.86	0.9	0.93	24	N/A	N/A

Determine required depth of subgrade replacement and residual heave potential after replacement with nonexpansive fill. A plot of replacement depth versus residual heave taken from the above table follows:



Removal and replacement to 3.0 feet will reduce the heave potential to approximately 1.0 inch, thus  $Y_{mcl} = 1.0$  inch. Note that significant additional removal would be required to reduce the residual heave potential any significant additional amount.

d. Edge Moisture Variation Distance ( $L_{m1}$ ) - taken from figures 3 and 4 as  $L_{m1} = 6.5$  feet.

3. Determine parameters required for Edge Lift analyses:

a. Modulus of Subgrade Reaction ( $K_1$ ). - Same as for Center Lift.

b. Design Allowable Bearing ( $q_{all}$ ). - Same as for Center Lift.

c. Soil - Beam Interface Pressure ( $P_{sw}$ ) and Magnitude of Edge Lift Heave Potential ( $Y_{m1}$ ). -

Determine the residual heave potential for the soil column beneath a typical beam for a range of assumed interface pressures.

A summary of calculations and results is presented in tabulated form on page 6. A plot of soil-beam interface pressure versus heave potential is shown on page 7. A reasonable bilinear representation of the results, for use by the structural engineer, can be developed assuming a linear relationship between the following points:

<u><math>P_{sw}</math>, TSF</u>	<u><math>Y_{m1}</math>, Inches</u>
0.0	$Y_{m1} = 1.25$
$q_{all} = 1.00$	$Y_{m1} = 1.0$
$q_{ult} = 3(q_{all}) = 3.00$	$Y_{m1} = 0.6$

d. Edge Moisture Variation Distance ( $L_{m1}$ ). The edge moisture variation distance is taken from figure 8 as  $L_{m1} = 3.0$  feet.

Given:  $D_f = 2.0\text{ft}$   $B = 1.0\text{ft}$

$C_s = 0.06$   $e_o = 0.60$

$\gamma_m = 125\text{pcf}$

$\sqrt{0.5tsf}$																	1.0tsf				2.0tsf				4.0tsf			
Z ft	$\bar{z}$ ft	h in	$\frac{\bar{z}-D_f}{B}$	$I_s$	$P_o$ tsf	$P_o+P_s$ tsf	$P_{exp}$ tsf	$\Delta P$ tsf	$P_f$ tsf	$\Delta h$ in	$\Delta P$ tsf	$P_f$ tsf	$\Delta h$ in	$\Delta P$ tsf	$P_f$ tsf	$\Delta h$ in	$\Delta P$ tsf	$P_f$ tsf	$\Delta h$ in									
0-3	<																											
---COMPACTED NONEXPANSIVE FILL TO A DEPTH OF 3.0 FT.---																												
3-4	3.5	12	1.5B	0.28	0.23	0.30	0.8	0.14	0.37	0.15	0.28	0.51	0.08	0.56	0.79	0	1.12	1.35	0									
4-6	5.0	24	3.0B	0.15	0.33	0.40	0.9	0.07	0.40	0.32	0.15	0.48	0.25	0.30	0.63	0.14	0.60	0.93	0									
6-8	7.0	24	5.0B	0.09	0.46	0.53	1.0	0.05	0.53	0.25	0.09	0.55	0.23	0.18	0.64	0.17	0.36	0.82	0.09									
8-10	9.0	24	7.0B	0.07	0.60	0.67	1.2	0.04	0.67	0.23	0.07	0.67	0.23	0.14	0.74	0.19	0.28	0.88	0.12									
10-12	11.0	24	9.0B	0.05	0.73	0.80	1.35	0.03	0.80	0.20	0.05	0.80	0.20	0.1	0.83	0.2	0.20	0.93	0.16									
12-14	13.0	24	11.0B	0.04	0.83	0.90	0.9	0.02	0.90	0.0	0.04	0.90	0.0	0.08	0.91	0	0.16	0.99	0									
				$\Sigma \Delta h$	$h = 1.15$						$\Sigma \Delta h$	$h = 0.99$			$\Sigma \Delta h$	$h = 0.7$		$\Sigma \Delta h$	$h = 0.38$									

Where:

$Z$  = depth interval

$\bar{z}$  = mean depth

$B$  = beam width

$D_f$  = beam depth

$\gamma_m$  = stress with depth

$P_o$  = overburden pressure

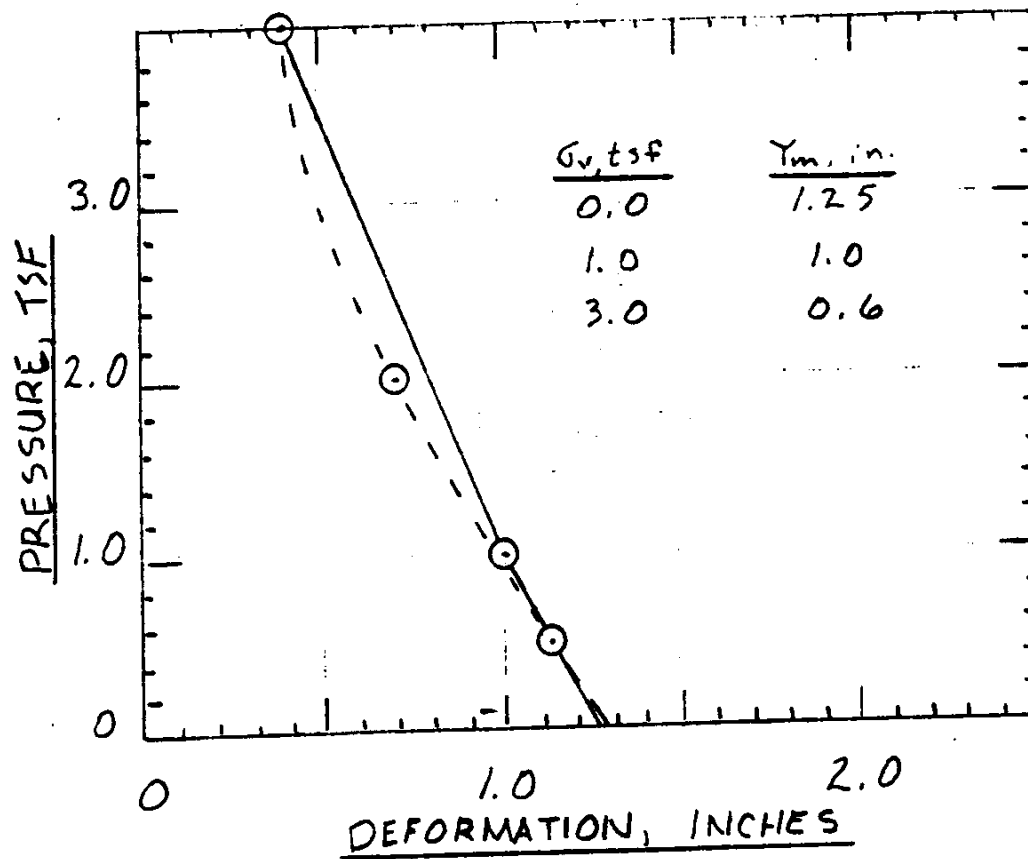
$P_s$  = surcharge pressure  
next to beam

$P_{exp}$  = expansion pressure

$P_f$  = vertical pressure resisting  
heave below beam

$P$  = stress @ depth due to  
to  $q_{app}$   $\Delta P = (I_s)(q_{app})$

$P_f = \begin{cases} \Delta P + P_o & \text{whichever} \\ \text{or} & \text{is} \\ P_o + P_s & \text{greater} \end{cases}$



EDGE LIFT PARAMETER

EXAMPLE PROBLEM

## APPENDIX B

### LIST OF DRAWINGS



<b>Project No.:</b> 101228.19					<b>FIRE AND EMERGENCY SERVICES CENTER FORT POLK, LA.</b>		LOCATION: Ft. Polk, La.
<b>Updated:</b> 9/29/10							Submittal: Final RFP X Due Date: Sept. 28, 2010 Remarks:
DRAWING FILE NAME	CALS FILE NAME	SEQ. NO.	SHEET NO.	SHEET TITLE			
fpfaescg-001iod		1	G-001	TITLE AND INDEX	X		Merrick
fpfaescg-002plm		2	G-002	PROJECT LOCATION PLAN	X		
fpfaesc-101dm1		3	C-101	SITE DEMOLITION PLAN	X		
fpfaesc-102dm2		4	C-102	EXISTING FIRE STATION DEMOLITION PLAN	X		
fpfaesc-103lay		5	C-103	SITE LAYOUT PLAN	X		
fpfaesc-104pav		6	C-104	PAVING PLAN	X		
fpfaesc-105utl		7	C-105	UTILITY SITE PLAN	X		
fpfaesc-501pdx		8	C-501	PAVING DETAILS	X		
fpfaesc-502udx		9	C-502	UTILITY DETAILS	X		
fpfaesc-503sdx		10	C-503	SANITARY SEWER DETAILS	X		
fpfaesc-504dm1		11	C-504	HANDICAPPED PARKING PLAN AND DETAILS	X		
fpfaesc-505dm2		12	C-505	DUMPSTER ENCLOSURE PLAN AND DETAILS	X		
fpfaesc-506sgd		13	C-506	SWING GATE DETAILS	X		
fpfaesc-507ecd		14	C-507	TEMPORARY EROSION SEDIMENT AND WATER POLLUTION CONTROL MEASURES	X		
fpfaesc-101ecx		15	ES-101	ELECTRICAL/COMMUNICATIONS SITE PLAN	X		
		16	A-101	CONCEPTUAL FLOOR PLAN	X		Merrick
		17	A-201	CONCEPTUAL ELEVATIONS I	X		Merrick
		18	A-202	CONCEPTUAL ELEVATIONS II	X		Merrick
		19	A-301	CONCEPTUAL RENDERINGS	X		Merrick
fpfaesc-101scp		20	E-101	SECURITY CAMERA LAYOUT PLAN	X		
fpfaesc-102ssp		21	E-102	FIRST-IN ALERT SYSTEM LAYOUT PLAN	X		

## APPENDIX C UTILITY CONNECTIONS

Reference Appendix J

## APPENDIX D

### Results of Fire Flow Tests

Below is the fire flow data collected on July 21, 2011 at three of the fire hydrant locations on the site.

Hydrant- TRA 1

Location- Missouri Ave.

Hydrant is on a 6" main.

Flow (GPM) 2454gpm (@20psi=4827)

Static Pressure- 62psi

Residual Pressure- 50psi (with two hydrants open TRA 1 and TRA 3)

Hydrant-TRA 2

Location- Missouri Ave.

Hydrant is on a 6" main.

Flow (GPM) 1210gpm (@20psi=3819)

Static Pressure- 62psi

Residual Pressure- 57psi( with only one hydrant TRA 1 open)

Hydrant- TRA 3

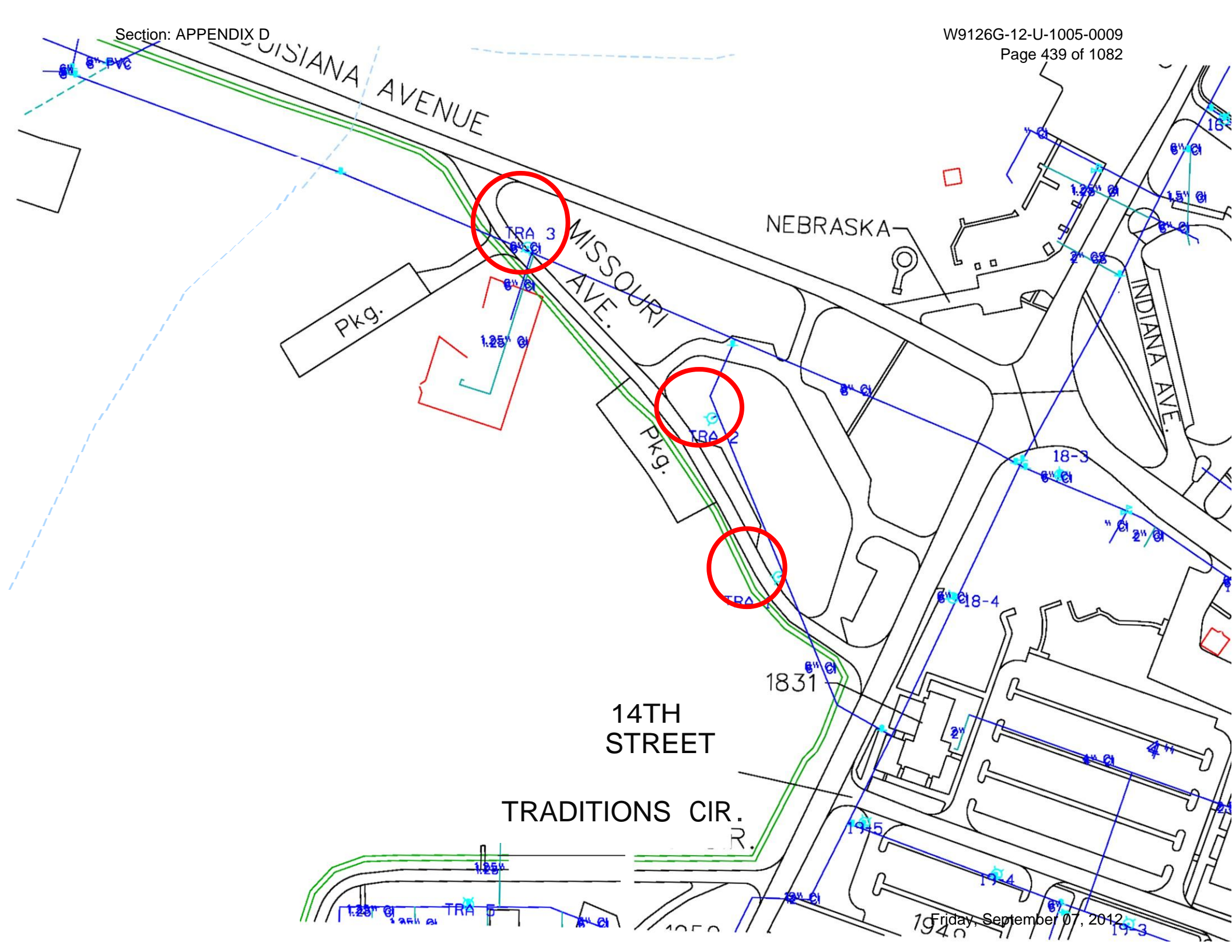
Location- Missouri Ave and Louisiana Ave

Hydrant is on a 8" main

Flow (GPM)- 1210gpm (@20psi=3719)

Static Pressure- 60

Residual Pressure- 55psi(with two hydrants open TRA 1 and TRA 2)



## APPENDIX E

### ENVIRONMENTAL INFORMATION

REPLY TO  
ATTENTION OF:

**DEPARTMENT OF THE ARMY**  
**US ARMY INSTALLATION MANAGEMENT COMMAND**  
**HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT POLK**  
**6661 WARRIOR TRAIL, BLDG 350**  
**FORT POLK, LOUISIANA 71459-5339**

IMSE-POL-ZA

**APR 13 2009**

MEMORANDUM FOR Director, Installation Management Command- Southeast Region,  
ATTN: IMSE-Z, Mr. Davis D. Tindoll, 1593 Hardee Ave SW, Ft McPherson, GA 30330-1057

SUBJECT: Request for Siting Approval of Fort Polk, Louisiana, FY 12 Projects (Project Number (PN) 17220, Emergency Services Center; PN 64415, BDE HQ and COF; PN 71419, Battlefield Surveillance Brigade; PN 67033, Multi-Purpose Machine Gun Range; PN 71709, Infantry Platoon Battle Course)

1. The subject project sites have been approved by the Fort Polk Installation Planning Board and the Range and Training Facilities Board at Fort Polk, Louisiana as applicable. Site maps of the projects are provided as enclosure one.
2. PN 17220, Emergency Services Center and PN 64415, Brigade Headquarters and Company Operation Facility, are sited in the South Fort Cantonment area on previously disturbed property within block one and the 1800 block. The sites previously contained WWII facilities prior to their demolition. Both of these areas were in an administrative area and there are no historical records or any physical evidence of unexploded ordinance (UXO) or that any ordinance was ever used in these areas.
3. PN 71419, Battlefield Surveillance Brigade, is sited in North Fort Polk in new undisturbed area adjoining the North Fort Cantonment area. This area will expand the North Fort Cantonment when complete. There are no historical records or any physical evidence of unexploded ordinance, however appropriate ordinance response action will be performed depending upon construction activities identified.
4. PN 67033, Multi-Purpose Machine Gun Range (MPMG), and PN 71709, Infantry Platoon Battle Course (IPBC) consists of range projects that will be constructed within designated military training areas. The MPMG is located in a range area East of the South Fort Cantonment and IPBC is located at Peason Training Area, North West of Fort Polk. UXO may be present in both areas, therefore appropriate ordinance response action will be performed depending upon construction activities identified.
5. A Record of Environmental Consideration (REC) for PN 17220, Emergency Services Center and PN 64415, Brigade Headquarters and Company Operation Facility, is complete (see enclosure 2). PN 71419, Battlefield Surveillance Brigade, PN 67033, Multi-Purpose Machine Gun Range (MPMG), and PN 71709, Infantry Platoon Battle Course (IPBC) require an Environmental Analysis (EA) to satisfy National Environmental Policy Act requirements. The Fort Polk in-house environmental staff is scheduled to complete these EA's by November 2009.

IMSE-POL-ZA

SUBJECT: Request for Siting Approval of Fort Polk, Louisiana, FY 12 Projects (Project Number (PN) 17220, Emergency Services Center; PN 64415, BDE HQ and COF; PN 71419, Battlefield Surveillance Brigade; PN 67033, Multi-Purpose Machine Gun Range; PN 71709, Infantry Platoon Battle Course)

6. Request Region site approval for subject projects.

7. Point of contact is Scotty Goins, Chief, Planning Division, Directorate of Public Works, at DSN 863-4168 or commercial (337) 531-4168, [scotty.goins@us.army.mil](mailto:scotty.goins@us.army.mil).

2 Encls

1. Site Maps

2. RECs



DAVID G. SAGE  
COL, IN  
Commanding



DEPARTMENT OF THE ARMY  
JOINT READINESS TRAINING CENTER AND FORT POLK  
FORT POLK, LOUISIANA 71459

RECORD OF ENVIRONMENTAL CONSIDERATION

To: (Environmental Officer)

From: Robert Hughes

1. **Project Title:** Construct New Emergency Service Center PN 17220.
2. **Brief Description of Proposed Action:** Construct a standard design 6-bay fire station with an alternate emergency operations center to house a two company headquarters.
3. **Project Engineer/ Manager Determination:**

Environmental Parameters	YES	NO
Action will require DHH approval of water system changes.	Y	
Action will require DHH approval of wastewater changes.		N
Project footprint between 1 and 5 acres (storm water permit).	Y	
Project footprint greater than 5 acres (storm water permit).		N
Action has the potential to disturb asbestos.	N	
Action has the potential to disturb lead based paint.	N	

Friday, September 07, 2012

4. **Purpose and Need:** This project will provide adequate space for fire department personnel and for fire equipment vehicles now stored outside or in buildings that are not readily accessible to fire personnel.
5. **Anticipated Date and/or duration of Proposed Action:** 2009
6. **A Map is attached.**
7. **Reason for using record of environmental consideration:**

Is categorically excluded under the provisions of categorical exclusion (CX) C-1  
32 CFR 651, Appendix B [and no extraordinary circumstances exist and there are no adverse affects to sensitive resources, as defined in CFR 651.29(b), 651.29(c)] because: (1) See paragraph 7 below (Effects on the Environment), showing that there are no significant environmental impacts; and (2) this proposed action satisfies the screening conditions in 32 CFR 651.29(a), and meets all screening criteria in 32 CFR 651, Appendix B, Section I.

8. **Effects on the Environment:** The proposed action was evaluated by the proponent and an ENRMD Environmental Subject Matter Expert / Evaluator using the following parameters.

Environmental Parameters	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
* Air quality	See Attached Memorandum #1			
* Water quality	E.H. 3/10/08			
* Water/Waste Water Systems	See Attached Memorandum #2			
Cultural Resources				
Does the property qualify as historical property under the National Historic Preservation Act (NHPA)? yes (sign name) _____				
* Natural Resources			E.H. 3/10/08	E.H. 3/10/08
Endangered Species	See Attached Statement #1			3/10/08 #1
Noise			E.H. 3/10/08	E.H. 3/10/08
Sensitive plants or bogs				
Wetlands				

CY08105 ENRMD Control Number

Environmental Parameters	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
* Asbestos	See Attached Statement #2		E.H. 3/10/08	E.H. 3/10/08
Lead based paint				
Biodiversity				
* Solid Waste	See Attached Memorandum #3		E.H. 3/10/08	E.H. 3/10/08
Hazardous Material \ Waste				
Toxic Substances				
Environmental Justice				
Protection of Children				

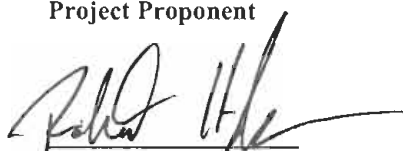
9. Coordination with other agencies and installation departments:

Installation Organization or Other Agency	Coordination Date	Coordinating Person
Coordination with Master Planner	4 DEC 07	Scotty Goins

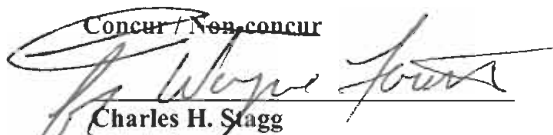
10. NEPA Specialist survey report is attached as Appendix A.

11. **Conclusion:** This proposed action has been evaluated in accordance with 32 CFR Part 651. It has been determined that this proposed action does not individually or cumulatively have significant effects on the human or natural environment. There will be no environmentally controlled changes to existing environmental conditions. There are no circumstances which would require an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). This proposed action: (1) satisfies all screening conditions in 32 CFR 651.29(a); (2) meets all screening criteria in 32 CFR 651, Appendix B, Section I; (3) does not involve any extraordinary circumstances, as defined in 32 CFR 651.29(b), that would preclude the use of a CX; (4) will not adversely affect environmentally sensitive resources as defined in 32 CFR 651.29(c); (5) qualifies for categorical exclusion (CX) number(s) C-1 in accordance with 32 CFR 651, Appendix B, Section II.
12. **Other Environmental Laws:** This document does not relieve the proponent of applicable federal and state laws and regulations.

Project Proponent

  
 Robert Hughes  
 Planner, DPW-PD  
 28 January 2008

Installation Environmental Coordinator

Concur / Non-concur  
  
 Charles H. Stagg  
 Chief, Environmental and Natural  
 Resources Management Division  
 Directorate of Public Works  
 Date: 3 March 2008

**DEPARTMENT OF THE ARMY**  
**JOINT READINESS TRAINING CENTER AND FORT POLK**  
FORT POK LOUISIANA 71459  
**ENVIRONMENTAL ANALYSIS/FIELD SURVEY REPORT**  
Of  
Construction of a New Emergency Services Center, N 17220.

On March 3, 2008 a field survey was conducted by a NEPA staff member. An inspection of the proposed building site for the construction of a new Emergency Services Center as sited on the enclosed map was conducted as a baseline survey to evaluate the potential impacts of the proposed project. The proposed action is to construct a new facility for use by the Fort Polk Fire Station employees at South Fort, Fort Polk. I observed that no environmental impacts would occur during the construction of the new facility additionally, the action adequately meets the screening criteria for a Record of Environmental Consideration.

The proposed action is covered under categorical exclusion (CX) number **C-1** 32 Code of Federal Regulations (CFR) 651. CX C-1 states - "Construction of an addition to an existing structure or new construction on a previously undisturbed site if the area to be disturbed has no more than 1.0 cumulative acres of new surface disturbance. This does not include construction of facilities for the transportation, distribution, use, storage, treatment, and disposal of solid waste, medical waste, and hazardous waste (REC required). In order for a categorical exclusion to be used as stated in 32 CFR 651, a set of screening criteria must be met. Those screening criteria are listed below.

A CX may be used only when each of the following screening criteria is true:

- The action has NOT been segmented. TRUE
- The action does NOT have a reasonable likelihood of causing significant effects on public health, safety or the environment. TRUE
- This action does NOT cause an imposition of uncertain or unique environmental risks. TRUE
- This action is NOT of greater scope or size than is normal for this category of action. TRUE
- This action is NOT expected to produce reportable releases of hazardous or toxic substances as specified in 40 CFR part 302, Designation, Reportable Quantities, and Notification. TRUE
- This action is NOT expected to produce releases of petroleum, oils, and lubricants (POL) except from a properly functioning engine or vehicle, application of pesticides and herbicides, where the proposed action results in requirement to develop or amend a Spill Prevention, Control, or Counter Measure Plan. TRUE
- There is NO reasonable likelihood of this action violating any federal, state, or local law or requirements imposed for the protection of the environment. TRUE
- This action does NOT involve effects on the environment that are highly uncertain, involve unique or unknown risks, or are scientifically controversial. TRUE
- This action does NOT establish a precedent for future actions that are reasonably likely to have a future significant effect. TRUE
- This action is not expected to potentially degrade an already existing poor environment or effect areas not already significantly modified from their natural condition. TRUE
- This action is NOT expected produce unresolved effects on (1) Proposed federally listed, threatened, or endangered species or the r designate critical habitats, (2) Properties listed or eligible for listing on the Natural Register of Historic Places, (3) Areas having special designation or recognition such as prime or unique agriculture lands; coastal zones; designated wilderness or wilderness study areas; wild and scenic rivers; National Historic Landmarks; 100-year flood plains; wetlands; sole source aquifers; National Wildlife Refuges; national Parks; areas of critical environmental concern; or other areas of high environmental sensitivity, or (4) Cultural Resources as defined in AR 200-4. TRUE

DRAFT ENRMD CY 08 105

### Conclusion of Findings

An inspection of the proposed site for the construction of a new Emergency Services Center off of Missouri Avenue was conducted as a baseline environmental survey to evaluate potential environmental impacts caused by the proposed action. The area surveyed for the building was found to be in the existing South Fort cantonment area. In conclusion, the nature of this action poses no significant environmental impacts to the environment or human health. The proposed action meets the screening criteria for the completion of a Record of Environmental Consideration under categorical exclusion C-1 of the 32 CFR 651.

Site photograph:



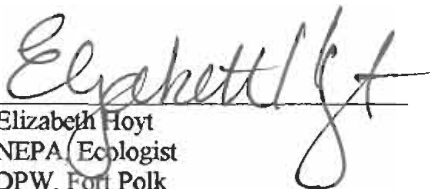
Photo taken from existing parking lot of Missouri Ave.



Photo taken from existing heli-pad.

Friday, September 07, 2012

For further information regarding this environmental analysis/field survey, please contact Elizabeth Hoyt at phone number 531-2093.

  
Elizabeth Hoyt  
NEPA Ecologist  
DPW, Fort Polk  
Louisiana 71459

DPW/ENRMD CY 08 105

Attachment #1

**Natural Resources Statement**

**Prior to Felling Any Tree, Coordination with Fort Polk Forestry Must Occur. For more information contact the appropriate NRMD program manager, Bruce Martin, (337) 531-7912.**

CY08105 ENRMD Control Number

Friday, September 07, 2012

## Asbestos Statement

New Construction of Facilities Require Asbestos Free Certification at the Completion of Project. For more information contact the appropriate CMB program manager, Sheilla Guzman, (337) 531-9128.

CY08105 ENRMD Control Number

Friday, September 07, 2012

8 February 2008

MEMORANDUM FOR ENRMD, Conservation Branch (Attn: NEPA Staff)

SUBJECT: Construct of new Emergency Service Center, Fort Polk, LA CY08105

1 Review of the proposed scope of work, to construct a standard 6-Bay fire station with an alternate emergency operations center to house a two company headquarters. Based on the description provide it is not anticipated to significantly impact the JRTC and Fort Polk Clean Air Act (Title V) requirements. Please notify this office of any changes in the Scope of Work to ensure final product is in compliance with Title V and Title VI of the Clean Air Act.

2 New HVAC units should not contain Ozone Depleting Compounds, rather alternative refrigerants should be used.

3 All work associated with this project must be performed in accordance with 40 CFR 82, Protection of Stratospheric Ozone; Titles V and VI of the Clean Air Act; and Army Regulation (AR) 200-Specifically:

A. All work on equipment containing ODCs must be performed by certified technicians using certified equipment, IAW 40 CFR 82.154. Friday, September 07, 2012

B. All persons disposing of appliances containing ODCs, must evacuate the refrigerant in the entire unit to a recovery or recycling machine certified pursuant to 40 CFR 82.158.

C. Per 40 CFR 82.154, no person maintaining, servicing, repairing, or disposing of appliances may knowingly vent or otherwise release into the environment any class I or class II substance used as refrigerant in such equipment. All releases of ODCs shall be reported to DPW, Environmental and Natural Resources Management Division, Compliance Management Branch as soon as possible.

The size and type of heating sources to be used for comfort heating should be submitted to the Air Quality Manager when that information becomes available. Considering the size of the building the permitting of the comfort heating system should not be a problem.

3. Point of contact is the undersigned at (337) 531-6026, or Harvey.Skinner@us.army.mil.

Harvey Skinner  
Installation Air Quality Manager

CY08105 ENRMD Control Number

Memorandum #1

## CEDARS, ALLISON Ms CTR USA IMCOM

---

**From:** Skinner, Harvey Mr CTR USA IMCOM  
**Sent:** Friday, February 08, 2008 12:33 PM  
**To:** CEDARS, ALLISON Ms CTR USA IMCOM  
**Subject:** Rec CY08105

**Attachments:** REC CY08105.rtf



REC CY08105.rtf  
(16 KB)

CY08105 ENRMD Control Number

Friday, September 07, 2012

CY08105 ENRMD Control Number



## CEDARS, ALLISON Ms CTR USA IMCOM

---

**From:** Duck, Thomas G Mr CTR USA IMCOM  
**Sent:** Monday, February 04, 2008 5:05 PM  
**To:** CEDARS, ALLISON Ms CTR USA IMCOM  
**Subject:** CY08105 - Construct New Emergency Service Center (PN 17220)  
**Attachments:** CY08105 - Construct New Emergency Service Center (PN 17220).doc



CY08105 -  
Construct New Emergency

Water comments for:

CY08105 - Construct New Emergency Service Center (PN 17220)

Friday, September 07, 2012

DPW/ENR/AD CY 08 105

MEMORANDUM FOR ENRMD, Conservation Branch (Attn: NEPA Staff)

SUBJECT: CY08105 - Construct New Emergency Service Center (PN 17220)

Wastewater Systems and Drinking water Systems tie in.

1. Louisiana Department of Health and Hospitals requires changes to the sanitary sewer system (including tie ins) and drinking water system to be approved prior to start of construction. P.E. certified copies of the drawings dealing with changes to the sewer system must be submitted **and approved** prior to start of construction.

Storm water

1. The contractor must comply with storm water runoff abatement and permitting requirements by the Louisiana Department for Environmental Quality. **Friday, September 07, 2012**
2. The contractor should be required to apply for Construction related storm water permits and pay the permitting fees
  - a. If less than one acre of land is disturbed by construction, no permit is required.
  - b. If one to 4.99999 acres of land is disturbed, then a stormwater permit is required. However construction can start two days after the permit application is mailed.
  - c. If 5 acres or more land is disturbed, then a stormwater permit is required and has to be submitted **and approved** before construction can begin.
3. The EPA is constantly tightening up storm water discharge regulations. It is advisable that the storm water run off from any parking areas be collected in a basin and be provided with an oil/water separator if this can be designed in now without significant additional costs. This will significantly reduce retrofitting costs later to abate the parking lot run as regulations tighten.
4. The contractor should be required to close the storm water construction permit after construction is completed.

Drinking Water

1. Backflow prevention must be provided for operations which can potentially contaminate the drinking water

Point of contact is the undersigned at (337) 531-2039, or tom.duck@us.army.mil

Tom Duck  
Water/Wastewater Program Manager

DPW/ENRAD CY 08 105 Memorandum #2

5 February 2008

## MEMORANDUM FOR RECORD

SUBJECT: CY08105, Construct New Emergency Service Center, Fort Polk, LA.

1. The project to construct a new Emergency Service Center has been evaluated for hazardous and solid waste compliance impacts.

2. All waste should be disposed offsite. The contractors must ensure proper disposal of any wastes generated. All solid waste must be properly characterized to determine the waste type (hazardous / non-hazardous / universal / PCB), and managed in accordance with LAC 33 Part V and VII.

a) Any hazardous waste must be properly manifested and packaged prior to leaving the installation. All manifests must be signed by a government representative in DPW-ENRMD.

b) Any non-hazardous solid waste must be disposed in a permitted facility that accepts the types of materials disposed. Also, recycle as much removed material as possible. The quantities of materials that are disposed or recycled must be reported to DPW-ENRMD for tracking purposes.

c) Any universal waste must be tracked in some manner when shipped off-site. This tracking may take the form of a log, invoice, bill of lading, or other shipping document. Wastes that fall under universal wastes are batteries, pesticides, mercury thermostats, fluorescent lights, and antifreeze. The quantities of universal waste shipped off-site must be reported to DPW-ENRMD for tracking purposes.

d) Any PCB waste must be properly manifested prior to leaving the Installation. Items that may contain PCB's are ballasts and capacitors found in fluorescent light fixtures.

3. Any products that are used in the project must be assessed to determine whether they are part of the EPA's Comprehensive Procurement Guidelines (40 CFR 247). Specified items are required to meet the Recommended Recovered Materials Content levels unless the materials are not competitively available in a reasonable period of time, are not available at a reasonable price, or do not meet performance standards. The EPA website (<http://www.epa.gov/cpg>) contains the most recent guidelines for the designated products.

4. The point of contact is the undersigned at 531-6578 or [steven.s.gibson@us.army.mil](mailto:steven.s.gibson@us.army.mil)



STEVEN S. GIBSON

Installation Solid Waste Manager

CY08105 ENRMD Control Number

Memorandum #3





CY08105 ENRMD Control Number



AVE

MISSOURI  
AVE.

NEBRASKA  
MON.

1713

1714

INDIANA AVE.

1650

1651

1715

1731

1733

1805

1803

CONSTRUCTION  
BOUNDARY  
APPROXIMATELY  
9.6 AC.

BN HQ

Site Plan

CY08105

ENRMD Control Number

INDIANA

MISSOURI  
AVE.INDIANA  
New Comm. LinesRelocated  
Light polesSURVEY AREA  
APPROXIMATELY  
9.6 AC.14TH  
STREET

TRADITIONS CIR.

MISSISSIPPI AVENUE

LOUISIANA AVENUE

Pkg.

Pkg.

Electrical Plan



DATE	BY	CHKD	APP'D

DATE	BY	CHKD	APP'D

U.S. ARMY CORPS OF ENGINEERS  
FORT MONROE DISTRICT  
FORT MONROE, TEXAS

**ENGINEER**  
CONSTRUCTION GROUP  
PLANNING SECTION

FORT POLK, LOUISIANA  
FIRE STATION / EMERGENCY DISPATCH  
FY08 1007220  
CONCEPTUAL DESIGN FOR  
EXTERIOR ELECTRICAL AND COMMUNICATION

Sheet  
reference  
number

01



INSTRUCTION  
UNDARY  
PROXIMATELY  
AC.

→ Plan



### Required Documentation for Small and Large Construction Permits

Required Documents	Construction Activity Size		Submit to LDEQ
	Small Permit 1 Acre to 4.9 Acres	Large Permit 5 Acres or More	
NOI (Notice of Intent)	N/A	YES	YES
NOT (Notice of Termination)	N/A	YES	YES
SCACR (Small Construction Activity Completion Report)	YES	N/A	YES
SWP3 (Storm Water Pollution Prevention Plan)	YES	YES	NO Kept on-site unless requested by LDEQ

### Storm Water Permitting and SWP3 Information

#### LDEQ and EPA Links:

- <http://cfpub2.epa.gov/npdes/stormwater>
- <http://cfpub2.epa.gov/npdes/outreach>
- <http://www.deq.louisiana.gov>

### Construction Entrance Posting Must Include the Following Information:

- ✓ LPDES Permit #
- ✓ Effective Date of Permit
- ✓ Local POC and Phone #
- ✓ Brief Project Description



- ✓ Location of Storm Water Pollution Prevention Plan (SWP3)

### Construction Storm Water Permitting



### DPW-ENRMD Compliance Management Branch

1647 23rd Street  
Building 2516  
Fort Polk, LA  
71459-5509  
337-531-6008

POC:

[Fredrick.j.hartzell@us.army.mil](mailto:Fredrick.j.hartzell@us.army.mil)

337.531.1962



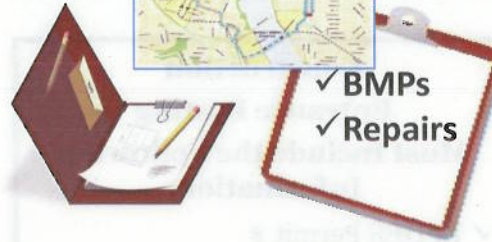
## Most Common BMPs Cited for Correction

- ✓ Soil tracking onto installation roads or soil washed into storm drain inlets.



- ✓ SWP3 records do not indicate BMP inspections are done weekly or before, during, and after storm events.

- ✓ No corrective actions described in the SWP3 if BMPs are repaired.



- ✓ Material stockpiles located next to drain inlets, no silt fence or other BMPs at base.



- ✓ Old and new storm drain inlets not protected by appropriate BMPs.



- ✓ Perimeter silt fence has no embedment and/or no minimum overlap.



- ✓ Liquid and hazardous material storage is located near drain inlets with no secondary containment and uncovered.



- ✓ Site is not stabilized after construction is completed. Temporary stabilization materials have not been removed after the site has been stabilized.

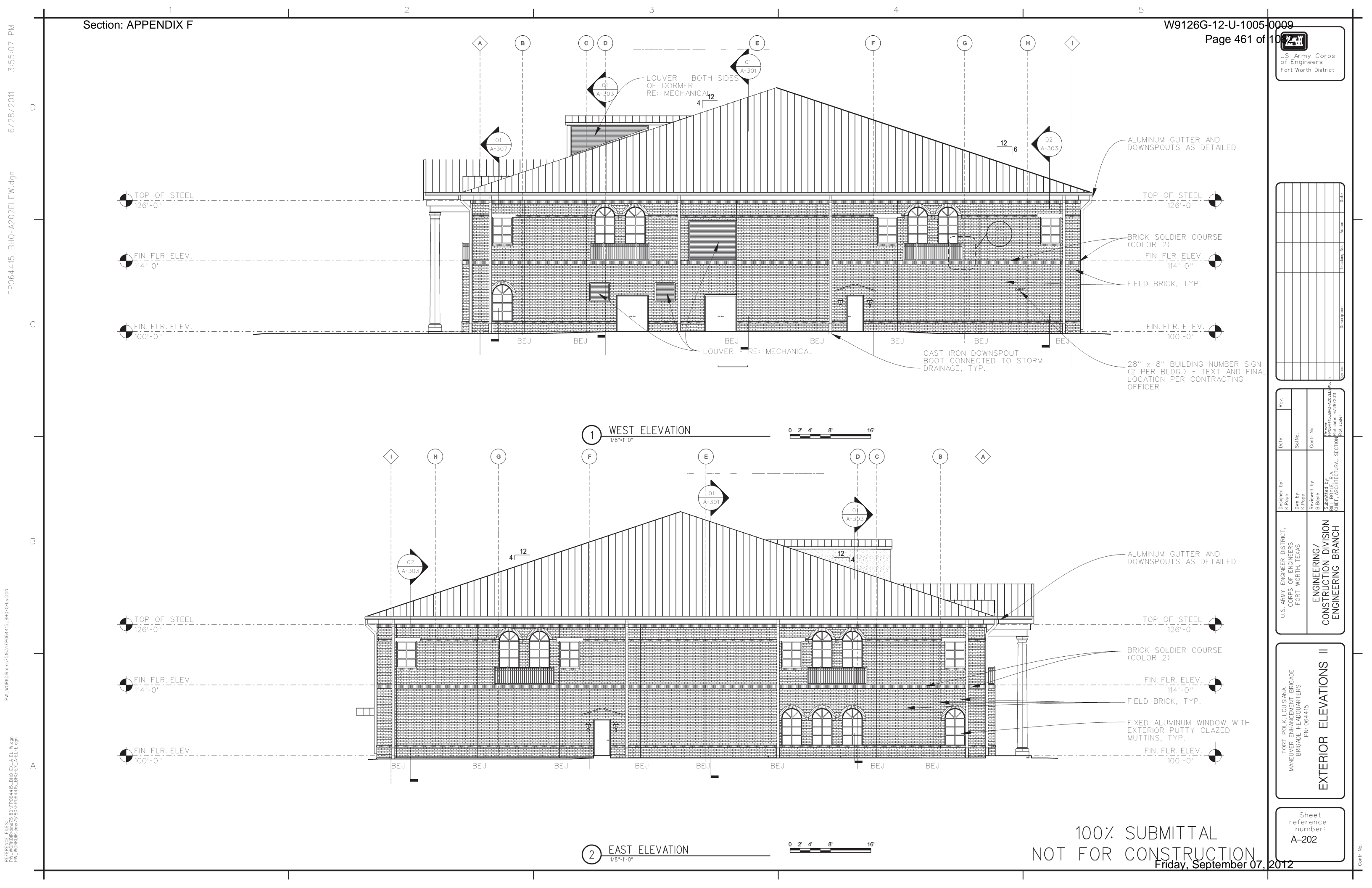
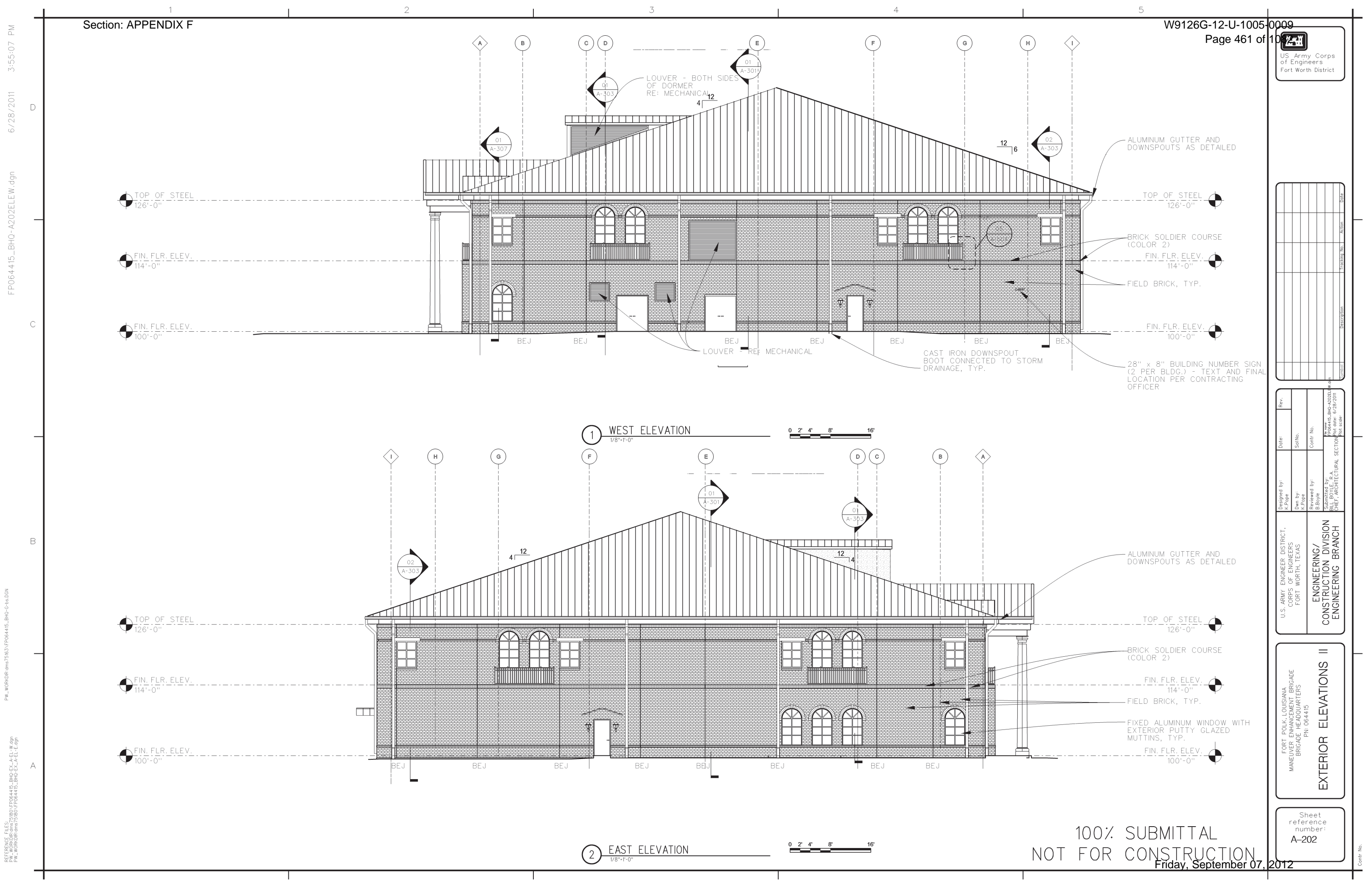


- ✓ No information at the entrance of the construction site displaying contractor and permit information.







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Section: APPENDIX F

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Page 461 of 10

US Army Corps of Engineers  
Fort Worth District

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LOUVER - BOTH SIDES OF DORMER RE: MECHANICAL

ALUMINUM GUTTER AND DOWNSPOUTS AS DETAILED

TOP OF STEEL 126'-0"

FIN. FLR. ELEV. 114'-0"

FIN. FLR. ELEV. 100'-0"

BRICK SOLDIER COURSE (COLOR 2)

FIELD BRICK, TYP.

CAST IRON DOWNSPOUT BOOT CONNECTED TO STORM DRAINAGE, TYP.

28" x 8" BUILDING NUMBER SIGN (2 PER BLDG.) - TEXT AND FINAL LOCATION PER CONTRACTING OFFICER

1 WEST ELEVATION  
1/8"=1'-0"

0 2' 4' 8' 16'

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01  
A-301  
01  
A-303

ALUMINUM GUTTER AND DOWNSPOUTS AS DETAILED

TOP OF STEEL 126'-0"

FIN. FLR. ELEV. 114'-0"

FIN. FLR. ELEV. 100'-0"

BRICK SOLDIER COURSE (COLOR 2)

FIELD BRICK, TYP.

FIXED ALUMINUM WINDOW WITH EXTERIOR PUTTY GLAZED MUTTINS, TYP.

2 EAST ELEVATION  
1/8"=1'-0"

0 2' 4' 8' 16'

100% SUBMITTAL  
NOT FOR CONSTRUCTION  
Friday, September 07, 2012

DESIGNED BY: K. Pope  
DATE: 6/28/2011  
DRAWN BY: K. Pope  
CHECKED BY: B. Boyle  
REVIEWED BY: B. Boyle  
SUBMITTED BY: BILL BOYLE, P.E.  
SHEAF, ARCHITECTURAL SECTION  
POST SCALE: 1/8"=1'-0"

U.S. ARMY ENGINEER DISTRICT,  
CORPS OF ENGINEERS  
FORT WORTH, TEXAS

ENGINEERING/  
CONSTRUCTION DIVISION  
ENGINEERING BRANCH

FORT POLK, LOUISIANA  
MANEUVER ENHANCEMENT BRIGADE  
HEADQUARTERS  
PN: 064415

EXTERIOR ELEVATIONS II

Sheet  
reference  
number:  
A-202

Contr. No.

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Section: APPENDIX F

W9126G-12-U-1005-0009  
Page 461 of 10

US Army Corps of Engineers  
Fort Worth District

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01 A-303  
01 A-301  
02 A-303

LOUVER - BOTH SIDES OF DORMER RE: MECHANICAL

ALUMINUM GUTTER AND DOWNSPOUTS AS DETAILED

TOP OF STEEL 126'-0"

FIN. FLR. ELEV. 114'-0"

FIN. FLR. ELEV. 100'-0"

BRICK SOLDIER COURSE (COLOR 2)

FIELD BRICK, TYP.

CAST IRON DOWNSPOUT BOOT CONNECTED TO STORM DRAINAGE, TYP.

28" x 8" BUILDING NUMBER SIGN (2 PER BLDG.) - TEXT AND FINAL LOCATION PER CONTRACTING OFFICER

1 WEST ELEVATION  
1/8"=1'-0"

0 2' 4' 8' 16'

02 A-303  
01 A-301  
01 A-303

ALUMINUM GUTTER AND DOWNSPOUTS AS DETAILED

TOP OF STEEL 126'-0"

FIN. FLR. ELEV. 114'-0"

FIN. FLR. ELEV. 100'-0"

BRICK SOLDIER COURSE (COLOR 2)

FIELD BRICK, TYP.

FIXED ALUMINUM WINDOW WITH EXTERIOR PUTTY GLAZED MUTTINS, TYP.

2 EAST ELEVATION  
1/8"=1'-0"

0 2' 4' 8' 16'

100% SUBMITTAL  
NOT FOR CONSTRUCTION  
Friday, September 07, 2012

U.S. ARMY ENGINEER DISTRICT,  
CORPS OF ENGINEERS  
FORT WORTH, TEXAS

ENGINEERING/  
CONSTRUCTION DIVISION  
ENGINEERING BRANCH

FORT POLK, LOUISIANA  
MANEUVER ENHANCEMENT BRIGADE  
HEADQUARTERS  
PN: 064415

EXTERIOR ELEVATIONS II

Sheet  
reference  
number:  
A-202

Designed by:  
K. Pope  
Dwn by:  
K. Pope  
Reviewed by:  
B. Boyle  
Submitted by:  
BILL BOYLE, P.E.  
CHIEF, ARCHITECTURAL SECTION  
For date: 6/28/2011  
Post date: 6/28/2011  
Post scale: 1/8"=1'-0"

Rev.  
Date  
So. No.  
Contr. No.

Symbol  
Description  
Tracking No.  
Action  
Date

REFERENCE FILES:  
PW\_WORKDIR\dms75180\FP064415\_BHQ-EX-A-EL-W.dgn  
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PW\_WORKDIR\dms75180\FP064415\_BHQ-G-6-6.dgn

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## APPENDIX G

### CADD SYSTEM AND BUILDING INFORMATION MODELING (BIM)



**CADD System and Building Information Modeling (BIM)**

All CADD files shall be fully compatible with Bentley Systems Micro Station. Save all design CADD files to be compatible with Bentley Systems Micro Station. If BIM is used, all submitted BIM Models and associated Facility Data shall be fully compatible with Bentley BIM file format and the USACE Bentley BIM v8 Workspace. Contractor shall select BIM application(s) and software(s) but all submitted BIM Models and associated Facility Data shall be fully compatible with any of the following file formats: Bentley BIM v8 with associated USACE Bentley BIM v8 Workspace. All submitted BIM Models and associated Facility Data shall be fully compatible with Bentley BIM v8 with associated USACE Bentley BIM v8 Workspace. BIM Files and data shall also be compatible with Bentley Systems Micro station.

- (a) CAD Data Final File Format: During the design development the Contractor shall capture georeferenced coordinates of all changes made to the existing site (facility footprint, utility line installations and alterations, roads, parking areas, etc). There is no mandatory methodology for how the geo-referenced coordinates will be captured, however, Engineering and Construction Bulletin No. 2006-15, Subject: Standardizing Computer Aided Design (CAD) and Geographic Information Systems (GIS) Deliverables for all Military Design and Construction Projects identifies the format for final as-built drawings and data sets to be delivered to the Government. Closeout requirements at the as-built stage require final geo-referenced GIS Database of new facilities along with all exterior modifications. The Government will incorporate this data set into the Installation's GIS Master plan or Enterprise GIS System. CADD drawings shall be prepared in accordance with the applicable general and discipline-specific provisions for drawing formats, level/layer assignments, line colors, line weights, and line types of the TSC-01 (A/E/C CADD Standards), JRTC & FP Regulation Sustainment Requirements for Fort Polk, Geographic Information System (GIS), and Survey Monumentation (available from the Corps of Engineers' Fort Polk Resident Office or the Fort Polk DPW), The CADD standards, including seed/prototype files containing the Government's preset standard settings and electronic reference files containing the Government's standard border/title block sheets, are located at the following Web site: <http://tsc.wes.army.mil/products/standards/aec/aecstdweb.asp>. Mark modifications to Contract drawings in accordance with the Fort Worth District's procedures for drawing modifications, which can be found in the document "CONSTRUCTION SOLICITATION, AMENDMENT, AWARD AND MODIFICATION PROCEDURES FOR DRAWINGS" located at <http://www.swf.usace.army.mil/>, then click on Organization, then Engineering and Construction Division, then Contract Administration, then the link "Amendment & Final Contract Award Specifics" ( <http://www.swf.usace.army.mil/pubdata/EC/eca/amendments.asp>). The Contractor shall submit a written request for approval of any deviations from the Government's established CADD standards. Deviations will not be permitted unless prior written approval of such deviations has been received from the Government.
- (b) Electronic Drawing Files: In addition to the native CAD design files, provide separate electronic drawing files (in editable CAD format and Adobe Acrobat PDF version 7.0 or higher) for each project drawing.
- (c) Each file (both CAD and PDF) shall represent one complete drawing from the drawing set, including the date, submittal phase, and border. Each drawing file shall be completely independent of any data in any other file, including fonts and shapes not included with the basic CAD software program utilized. Drawing files with external references or special fonts are not acceptable. All displayed graphic elements on all levels of the drawing files shall be part of the project drawing image. The drawing files shall not contain any graphic element that is not part of the drawing image.
- (d) Data Standards: Spatial Data Standard for Facilities, Infrastructure and Environment (SDSFIE) current release shall be followed for Geospatial database structure and attributes to allow for data integration. CADD data shall be documented according to the current release of the Architecture, Engineering and Construction (AEC)/CADD standards. All GIS and CADD data will be

documented in accordance with the Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata.

- (e) **Drawing Index:** Provide an index of drawings sheet in CAD as part of the drawing set, and an electronic list in Microsoft Excel of all drawings on the CD. Include the electronic file name, the sheet reference number, the sheet number, and the sheet title, containing the data for each drawing.
- (f) **Hard Copies:** Plot submitted hard copy drawings directly from the “electronic drawing files” and copy for quantities and sizes indicated in the distribution list at the end of this specification section. The Designers of Record shall stamp and sign original hard copy sheets as Released for Construction, and provide copies for distribution from this set.
- (g) **Coordinate System Projection and Datum:** All GIS data shall use the Universal Transverse Mercator Zone 15 North projection, World Geodetic System of 1984 (WGS84) datum, and the North American Vertical Datum of 1988 (NAVD88) using Metric as the working units to ensure data alignment and accuracy.  
CADD data shall be geo-referenced in the State Plane Coordinate System 1983, using the North American 1983 Geodetic Datum with Survey Feet as the working units. The projection, datum and coordinate system must be defined and then documented in the metadata for both CADD and GIS and provided whenever the data is distributed.
- (h) **CADD & GIS Deliverables:** All CADD deliverables of As-built drawings shall be delivered in a Micro Station V8 .DGN format utilizing survey feet for the working units. A seed file can be obtained from the Fort Polk DPW CADD/GIS Center (337-531-6846). GIS deliverables shall be delivered in current GeoMedia file format or an Arc View shape file format.

## APPENDIX H

### EXTERIOR SIGNAGE

Please refer to attached link:

<http://corpslakes.usace.army.mil/employees/sign/manual.cfm>

## APPENDIX I

### Acceptable Plants List



The following list is of Recommended Herbaceous species for Fort Polk.

Prepared by Dr. Charles M. Allen; 531-7535; [charles.m.allen1@us.army.mil](mailto:charles.m.allen1@us.army.mil)

Dec 10, 2009

Agave (*Manfreda virginica*)  
Arum, Arrow (*Peltandra virginica*) wet  
Aster (*Aster*, *Symphotrichum*) spp.  
Aster, Stokes (*Sokesia laevis*)  
Barbara's Buttons (*Marshallia caespitosa*, *graminifolia*, *trinervia*)  
Beardtongue (*Penstemon digitalis*, *laxiflorus*, *murrayanus*, *tenuis*)  
Bear's Foot (*Polymnia* (*Smallanthus*) *vedalia*)  
Bedstraw (*Galium circaezans*, *uniflorum*) shade  
Bee Balm (*Monarda fistulosa*) spice, butterfly  
Begarticks (*Bidens*)  
Berry, Partridge (*Mitchella repens*) shade  
Bishopweed, Mock (*Ptilimnium costatum*) wet  
Blackeyed Susan (*Rudbeckia grandiflora*, *hirta*, *laciniata*, *maxima*, *scabrifolia*, *subtomentosa*, *texana*)  
Blanket, Indian Gaillardia *aestivalis* red and yellow *flavovirens*  
Bluestar *Amsonia* spp. Wet  
Boneset (*Eupatorium perfoliatum*)  
Brier, Sensitive (*Mimosa* (*Schrankia*) *hystricina*, *microphylla*, *nuttallii*)  
Bunchflower (*Melanthium virginicum*)  
Bush Mint (*Hyptis alata*)  
Cardinal Flower (*Lobelia cardinalis*) wet  
Catchfly, Louisiana (*Silene subciliata*)  
Clover, Prairie (*Dalea candida*-white, *purpurea*-purple)  
Comfrey, Wild (*Cynoglossum virginianum*) shade  
Compass Plant (*Silphium laciniatum*)  
Coneflower, Pale Purple (*Echinacea pallida*) nectar  
Coneflower, Purple (*Echinacea purpurea*) nectar  
Cowbane (*Oxypolis filiformis*, *rigidior*) butterfly  
Dutchman's Pipe (Pipevine) (*Aristolochia serpentaria*) butterfly  
Elephant's Foot *Elephantopus carolinianus*, *elatus*, *nudatus*, *tomentosus* shade ground cover  
Eryngo, Blue *Eryngium integrifolium*/*hookeri*/*leavenworthii*  
Featherbells (*Stenanthium gramineum*)  
Fleabane, Daisy *Erigeron pulchellus*, *strigosus*  
Goat's rue (*Tephrosia virginiana*)  
Goldenaster, grassleaved (*Pityopsis graminifolia*)  
Goldenaster, Maryland (*Chrysopsis marilandica*)  
Goldenrod (*Solidago caesia*, *odora*, *nitidum*, *rugosa*) nectar  
Grass, Blue eyed (*Sisyrinchium* spp) annual  
Heal All (*Prunella vulgaris*)  
Hoarypea, Multibloom (*Tephrosia onobrychoides*)  
Horsemint (*Monarda punctata*) spice, butterfly  
Indian Pink (*Spigelia marilandica*) shade  
Indigo, False *Baptisia alba*, *bracteata*, *sphaerocarpa* -*australis*

Ironweed (*vernonia gigantean, texana*) nectar  
Jack in the pulpit *Arisaema triphyllum* shade  
Jimson weed (*Datura stramonium*) hummingbird moth  
Joepyeweed (*Eupatorium fistulosum*) nectar  
Lily, Carolina (*Lilium michauxii*)  
Lizard's tail (*Saururus cernuus*) wet  
Lobelia *Lobelia appendiculata, puberula*  
Lousewort (*Pedicularis canadensis*)  
Mallow (*Hibiscus aculeatus, laevis, moscheutos*) butterfly  
Mallow, Saltmarsh (*Kosteletzyka virginica*)  
Manroot (*Ipomoea pandurata*)  
Mayapple (*Podophyllum peltatum*) edible  
Maypop (Passion Vine) (*Passiflora incarnata, lutea*) butterfly, edible  
Meadow Beauty (*Rhexia alifanus, lutea, mariana, petiolata, virginica*)  
Meadow Rue (*Thalictrum dasycarpum*)  
Milkweed *Asclepias perennis, viridis* butterfly  
Milkweed, Butterfly *Asclepias tuberosa* butterfly, nectar  
Monkey Flower (*Mimulus alatus*) wet  
Mountain Mint (*Pycnanthemum albescens, muticum, tenuifolium*) butterfly, spice, Tea, nectar  
Obedient Plant (*Physostegia angustifolia, digitalis*)  
Partridge Pea (*Cassia (Chamaecrista) fasciculata, nictitans*) butterfly annual  
Petunia, Wild (*Ruellia carolinensis, humilis, pinetorum*)  
Phlox (*Phlox divaricata*-shade, *drummondii*-annual, *pilosa, paniculata*)  
Pickeral Weed (*Pontederia cordata*) wet  
Plaintain, Indian *Cacalia (Arnoglossum) ovata*  
Pinewoods Lily *Alophia drummondii*  
Poke (*Phytolacca americana*)  
Powderpuff, Yellow (*Neptunia lutea, pubescens*)  
Primrose, Evening (*Oenothera biennis, pilosella*)  
Queen's Delight (*Stylingia sylvatica*)  
Rosinweed (*Silphium asteriscus, gracile, radula*)  
Sage, Blue (*Salvia azurea*)  
Salvia, Lyreleaf (*Salvia lyrata*)  
Skullcap (Tractor Seat) (*Scutellara elliptica, integrifolia, ovate*)  
Snakeroot, Black (*Sanicula canadensis*)  
Snakeroot, Button (Rattlesnake Master) *Eryngium yuccifolium*  
Snakeroot, Sampson (*Psoralea psoralioides, simplex*)  
Solomon's Seal (*Polygonatum biflorum*) edible  
Sorrel, Wood (*Oxalis violacea*) edible  
Spiderlily (*Hymenocallis* spp)  
Spiderwort (*Tradescantia* spp.)  
Spurge, Flowering *Euphorbia corollata*  
Squarehead, Louisiana (*Tetragonotheca ludoviciana*)  
Star, Blazing (*Liatris acidota, aspera, elegans, pycnostachya, spicata, squarrosa, squarrulosa*)  
Star, Texas (*Hibiscus coccineus*) hummingbird  
Sunflower (*Helianthus angustifolius, hirsutus, mollis, silphioides*)  
Thalia, Powdery, (*Thalia dealbata*) wet  
Thistle *Cirsium horridulum* etc. butterfly, nectar, hummingbird, edible

Thoroughwort *Eupatorium album*, *leucolepis*, *rotundifolium* etc.  
Tickseed *Coreopsis lanceolata pubescens* (spring) *tripteris* (fall) *tinctoria* annual  
Vervain (*Verbena candensis* homestead purple)  
Violet (*Viola* spp.)  
Violet, Walter's (*Viola walterii*)  
Waterleaf, Blue *Hydrolea ovata* wet  
Woollywhite (*Hymenopappus scabiosaeus*)  
Winecup (Poppy Mallow) *Callirhoe papaver*  
Yam, Wild (*Dioscora villosa*)

Graminoids (Grass/Sedge/Rush)  
Basketgrass (*Oplismenus hirtellus*)  
Bluestem, Big (*Andropogon gerardii*)  
Bluestem, Little (*Schizachyrium scoparium*)  
Bluestem, Slender (*Schizachyrium tenerum*)  
Broomsedge (*Andropogon glomeratus/ternarius/virginicus*)  
Caric Sedge (*Carex* spp) spring, summer  
Flatsedge (*Cyperus*)  
Gama, Eastern (*Tripsacum dactyloides*)  
Indiangrass (*Sorghastrum nutans*)  
Jumpseed, Pinewoods (*Sporobolus junceus*)  
Melic Grass (*Melica mutica*)  
Muhly Grass (*Muhlenbergia capillaris*)  
Nutrush (*Scleria*)  
Oats, Inland Sea (River) *Chasmanthium latifolium*  
Panicum, Beaked (*Panicum anceps*)  
Paspalum, Florida *Paspalum floridanum*  
Plumegrass (*Erianthus (Saccharum) giganteus*)  
Purpletop (*Tridens flavus*)  
Rosettegrass *Dichanthelium* some species shade  
Rush (*Juncus coriaceus*, *effusus*)  
Sedge, white Topped *Dichromena (Rhynchospora) latifolia*)  
Speargrass (*Piptochaetum (Stipa) avenaceum*)  
Switchgrass (*Panicum virgatum*)  
Toothache Grass (*Ctenium aromaticum*)

#### Ferns

Ebony Spleenwort (*Asplenium platyneuron*) Evergreen  
Lady Fern (*Athyrium felix-femina*)  
Sensitive fern (*Onoclea sensibilis*)  
Cinnamon Fern (*Osmunda cinnamomea*)  
Royal Fern (*Osmunda regalis*)  
Broad Beech Fern (*Phegopteris hexagonotera*)

Christmas Fern (*Polystichum acrostichoides*) evergreen  
Southern Shield Fern (*Thelypteris kunthii*)  
Netted Chain Fern (*Woodwardia aerolata*)  
Virginia Chain Fern (*Woodwardia virginica*)

Prepared by Dr. Charles M. Allen; 531-7535; [charles.m.allen1@conus.army.mil](mailto:charles.m.allen1@conus.army.mil)  
March 30, 2009

The following list is of Recommended Shrub species for Fort Polk.

Shrubs that are Native and thus Preferred:

Arrowwood *Viburnum dentatum*  
Buckeye, Red *Aesculus pavia*  
Buckthorn, Carolina *Rhamnus (Frangula) caroliniana*  
Buttonbush *Cephalanthus occidentalis*  
Cherry-Laurel *Prunus caroliniana*  
Dogwood, Rough-leaf *Cornus drummondii*  
Fringetree *Chionanthus virginicus*  
Hawthorn, Green *Crataegus viridis*  
Hawthorn, Parsley *Crataegus marshallii*  
Holly, Deciduous *Ilex decidua*  
Hoptree *Ptelea trifoliata*  
Huckleberry, Summer (Elliott's Blueberry) *Vaccinium elliotii*  
Mayhaw *Crataegus opaca*  
palmetto *Sabal minor*  
Pawpaw *Asimina triloba*  
Silverbell *Halesia diptera*  
Snowbell, American *Styrax americanus*  
Snowbell, bigleaf *Styrax grandifolia*  
Southern Crabapple *Malus angustifolia*  
Stick, Devil's Walking *Aralia spinosa*  
Sumac, Smooth *Rhus glabra*  
Sumac, winged *Rhus copallina*  
Titi, White *Cyrilla Ctrilla racemiflora*  
Viburnum, Blackhaw *Viburnum rufidulum*  
Viburnum, Possumhaw *Viburnum nudum*  
Virginia Willow *Itea virginica*  
Wax Myrtle (bayberry) *Myrica cerifera*  
Yaupon *Ilex vomitoria*

Shrubs that are Acceptable (Not Native):

boxwood *Buxus sempervirens*  
Tree, Chaste *Vitex agnus-castus*  
Myrtle, Crape *Lagerstroemia indica*  
Hawthorn, Indian *Raphiolepis indica*  
Japanese Maple *Acer palmatum*  
Loquat *Eriobotrya japonica*  
Mulberry, Paper *Broussonetia papyrifera*  
Thorn, Jerusalem *Parkinsonia aculeate*  
Gardenias *Gardenia*  
Camellias *Camellia*  
Palms several genera  
Junipers *Juniperus*

## Trees that are Native and thus Preferred

Ash, Green *Fraxinus pennsylvanica*  
Ash, White *Fraxinus americana*  
Baldcypress *Taxodium distichum*  
Bay, Red *Persea borbonia*  
Beech, American *Fagus grandifolia*  
Birch, River *Betula nigra*  
Boxelder *Acer negundo*  
Catalpa *Catalpa bignonioides*  
Cherry, Black *Prunus serotina*  
Cottonwood, Eastern *Populus deltoides*  
Dogwood, Flowering *Cornus florida*  
Elm, American *Ulmus americana*  
Elm, Cedar *Ulmus crassifolia*  
Elm, Slippery *Ulmus rubra*  
Elm, Winged *Ulmus alata*  
Gum, Black *Nyssa sylvatica*  
Gum, Sweet Liquidambar *styraciflua*  
Gum, Tupelo *Nyssa aquatica*  
Hackberry *Celtis laevigata*  
Holly, American Holly *Ilex opaca*  
Hophornbeam, Eastern *Ostrya virginiana*  
Huckleberry, Tree (Winter) *Vaccinium arboreum*  
Ironwood *Carpinus caroliniana*  
Locust, Black (Robinia) *pseudoacacia*  
Locust, Honey (Gleditsia) *triacanthos*  
Magnolia, Southern *Magnolia grandiflora*  
Magnolia, Sweetbay *Magnolia virginiana*  
Maple, Drummond Red *Acer rubrum* var. *drummondii*  
Maple, Red *Acer rubrum* var. *rubrum*  
Maple, Silver *Acer saccharinum*  
Maple, Sugar *Acer saccharum*  
Mulberry, Red *Morus rubra*  
Oak, Cherrybark *Quercus pagoda*  
Oak, Live *Quercus virginiana*  
Oak, Nuttall *Quercus texana*  
Oak, Shumard *Quercus shumardii*  
Oak, Southern Red *Quercus falcata*  
Oak, Swamp Chestnut (Cow) *Quercus michauxii*  
Oak, Water *Quercus nigra*  
Oak, White *Quercus alba*  
Oak, Willow *Quercus phellos*  
Pecan *Carya illinoensis*  
Persimmon *Diospyros virginiana*  
Pine, Loblolly *Pinus taeda*  
Pine, Longleaf *Pinus palustris*  
Pine, Shortleaf *Pinus echinata*

Plum, Mexican *Prunus mexicana*  
Redbud, Eastern *Cercis canadensis*  
Redcedar, Eastern *Juniperus virginiana*  
Sassafras *Sassafras albidum*  
Serviceberry *Amelanchier arborea*  
Sourwood *Oxydendrum arboreum*  
Sycamore *Platanus occidentalis*  
Willow, Black *Salix nigra*  
Yellow-Poplar (tulip poplar) *Liriodendron tulipifera*

Trees that are Acceptable (Not Native)

Ash, Arizona *Fraxinus velutina*  
Elm, Chinese *Ulmus parvifolia*  
Elm, Siberian *Ulmus pumila*  
Ginkgo *Ginkgo biloba*  
Magnolia, Saucer *Magnolia soulangiana*  
Pine, Slash *Pinus elliottii*  
Pine, Spruce *Pinus glabra*  
Pistachio, Chinese *Pistacia chinensis*  
Tree, Chinese Parasol *Firmiana simplex*  
Tree, Golden Rain *Koelreuteria bipinnata*  
Willow, Weeping *Salix babylonica*



Prepared by Dr. Charles M. Allen; 531-7535; [charles.m.allen1@conus.army.mil](mailto:charles.m.allen1@conus.army.mil)  
March 30, 2009

The following list is of species that are invasive on Fort Polk or are reported to be invasive in the area. These species should not be considered for planting on Fort Polk.

**Invasive Tree Species: Do Not Plant!**

Chinaberry *Melia azedarach*  
Mimosa *Albizia julibrissin*  
Oak, Sawtooth *Quercus acutissima*  
Pear, Bradford *Pyrus calleryana*  
Tree of Heaven *Ailanthus altissima*  
Tree, Camphor *Cinnamomum camphora*  
Tree, Chinese Tallow (Chicken Tree) *Sapium sebiferum* (*Triadicia sebifera*)  
Tree, Golden Rain *Koelreuteria paniculata*  
Tree, Tung Oil *Aleurites (Vernicia) fordii*

**Invasive Shrub species: Do Not Plant**

Bamboo, golden *Phyllostachys aurea*  
Cedar, Salt *Tamarix* spp.  
Eye, Hen's *Ardisia crenata*  
Holly, Burford *Ilex cornuta*  
Lespedeza, shrubby *Lespedeza bicolor*  
Ligustrum, Wax *Ligustrum lucidum*, *japonicum*, *vulgare*  
Nandina *Nandina domestica*  
olive, thorny/autumn *Elaeagnus pungens/umbellata*  
Privet, Chinese *Ligustrum sinense*  
Rose, Multiflora *Rosa multiflora*

**Invasive Vine Species: Do Not Plant**

bigleaf periwinkle *Vinca major*  
catclawvine *Macfadyena unguis-cati*  
Chinese wisteria *Wisteria sinensis*  
English ivy *Hedera helix*  
Japanese climbing fern *Lygodium japonicum*  
Japanese honeysuckle *Lonicera japonica*  
Japanese knotweed *Polygonum cuspidatum*  
kudzu *Pueraria montana* var. *lobata*

**Invasive Grass/Sedge Species Do Not Plant**

cogon grass *Imperata cylindrica/brasiliensis*  
dallisgrass *Paspalum dilatatum*  
fragrant flatsedge *Cyperus odoratus*  
giant reed *Arundo donax*  
glenwoodgrass *Sacciolepis indica*  
Invasive Grass/Sedge Species (Cont.): Do Not Plant  
haspan flatsedge *Cyperus haspan*

itchgrass *Rottboellia cochinchinensis*  
Japanese stiltgrass *Microstegium vimineum*  
Johnsongrass *Sorghum halepense*  
King Ranch Bluestem *Bothriochloa ischaemum*  
nutgrass *Cyperus rotundus*  
Paraguayan windmill grass *Chloris canterai*  
poorland flatsedge *Cyperus compressus*  
redroot flatsedge *Cyperus erythrorhizos*  
ricefield flatsedge *Cyperus iria*  
smut grass *Sporobolus indicus*  
strawcolored flatsedge *Cyperus strigosus*  
tapertip flatsedge *Cyperus acuminatus*  
torpedo grass *Panicum repens*  
Uruguayan pampas grass *Cortaderia selloana*  
variable flatsedge *Cyperus difformis*  
Vasey's grass *Paspalum urvillei*  
weeping lovegrass *Eragrostis curvula*  
yellow nutsedge *Cyperus esculentus*

Invasive Forb Species: Do Not Plant  
air yam *Dioscorea bulbifera*  
bitterweed *Helenium amarum*  
Brazilian vervain *Verbena brasiliensis*  
bull thistle *Cirsium vulgare*  
chamber bitter *Phyllanthus urinaria*  
Chinese lespedeza *Lespedeza cuneata*  
elephant's ear *Colocasia esculenta*  
hairy catsear *Hypochaeris radicata*  
hairy crabweed *Fatoua villosa*  
Japanese clover *Kummerowia striata*  
nodding plumeless thistle *Carduus nutans*  
prickly lettuce *Lactuca serriola*  
rough cocklebur *Xanthium strumarium*  
Spanish needles *Bidens bipinnata*  
sweet clover *Melilotus indica*  
tropical soda apple *Solanum viarum*  
windowbox woodsorrel *Oxalis rubra*

Invasive Aquatic Species: Do Not Plant  
Brazilian waterweed *Egeria densa*  
common water hyacinth *Eichhornia crassipes*  
kariba-weed *Salvinia molesta*  
waterhyme *Hydrilla verticillata*





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PROJ-NUM:017220  
FT. POLK  
LOUISIANA

# FIRE AND EMERGENCY SERVICES CENTER

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C-504	HANDICAPPED PARKING PLAN AND DETAILS
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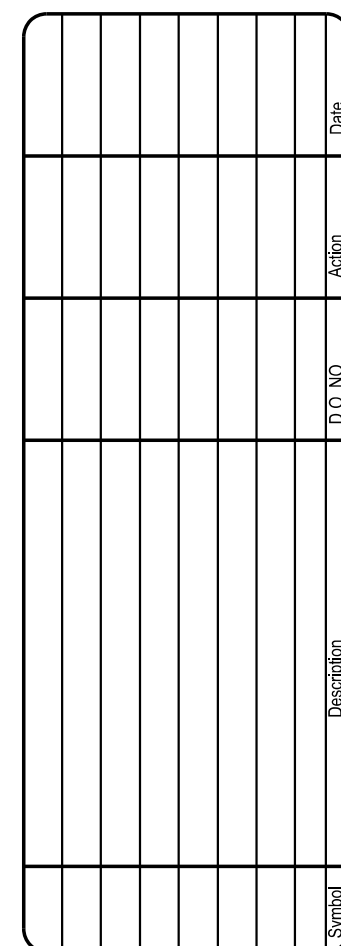
<b>U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS</b>		<b>Designed by:</b> N. FAHY	<b>Date:</b> NOVEMBER 2011	<b>Rev.</b>
		<b>Dwn by:</b> N. FAHY	<b>Sd No.</b>	
		<b>Reviewed by:</b> S. TOBIN	<b>Corp No.</b> W9126G-07-D-0005	
<b>K. M. NG &amp; ASSOCIATES, INC., CONSULTING ENGINEERS SAN ANTONIO, TEXAS 78201 TEXAS REGISTERED ENGINEERING FIRM 1-442</b>		<b>Submitted by:</b> KUNG M. NG, PE ENGINEER	<b>File name:</b> <b>Proj date:</b> \$DATE\$ <b>Proj scale:</b> AS SHOWN	


FORT POLK, LOUISIANA  
FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220  
TITLE AND INDEX

Sheet  
reference  
number:  
**G-001**

Sheet 1 of 21

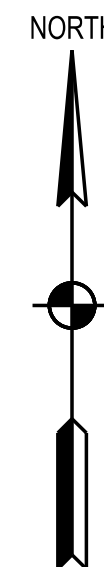
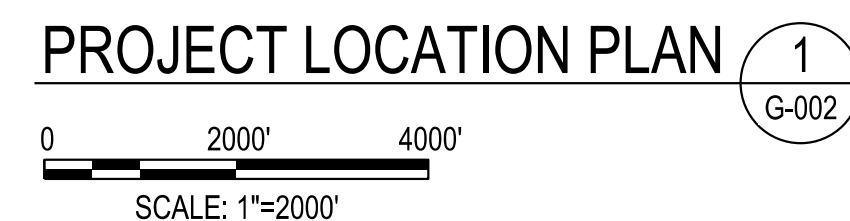


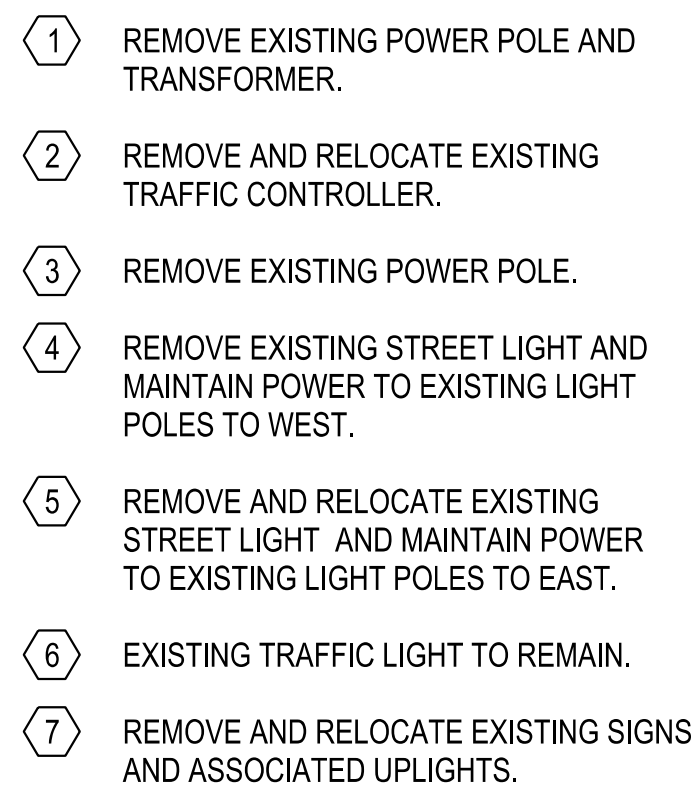


<b>U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS</b>	Designed by: <b>M. PIERZICA</b>	Date: <b>NOVEMBER 2011</b>	Rev.
	Drawn by: <b>E. CHAVEZ</b>	Scale: <b></b>	
<b>K. M. NG &amp; ASSOCIATES, INC.</b>  <b>CONSULTING ENGINEERS</b> 10000 W. FORT WORTH AVENUE, SUITE 200 FORT WORTH, TEXAS 76133-4444 TEL: 817-335-9999 FAX: 817-335-9998 WWW.KMNG.COM	Reviewed by: <b>K.M. NG</b>	Contract No.:	
	Submitted by: <b>KING M. NG, PE</b>	File name:	
		Date: <b>11/1/2011</b> Project: <b>AS SHOWN</b> Drawing: <b>AS SHOWN</b>	

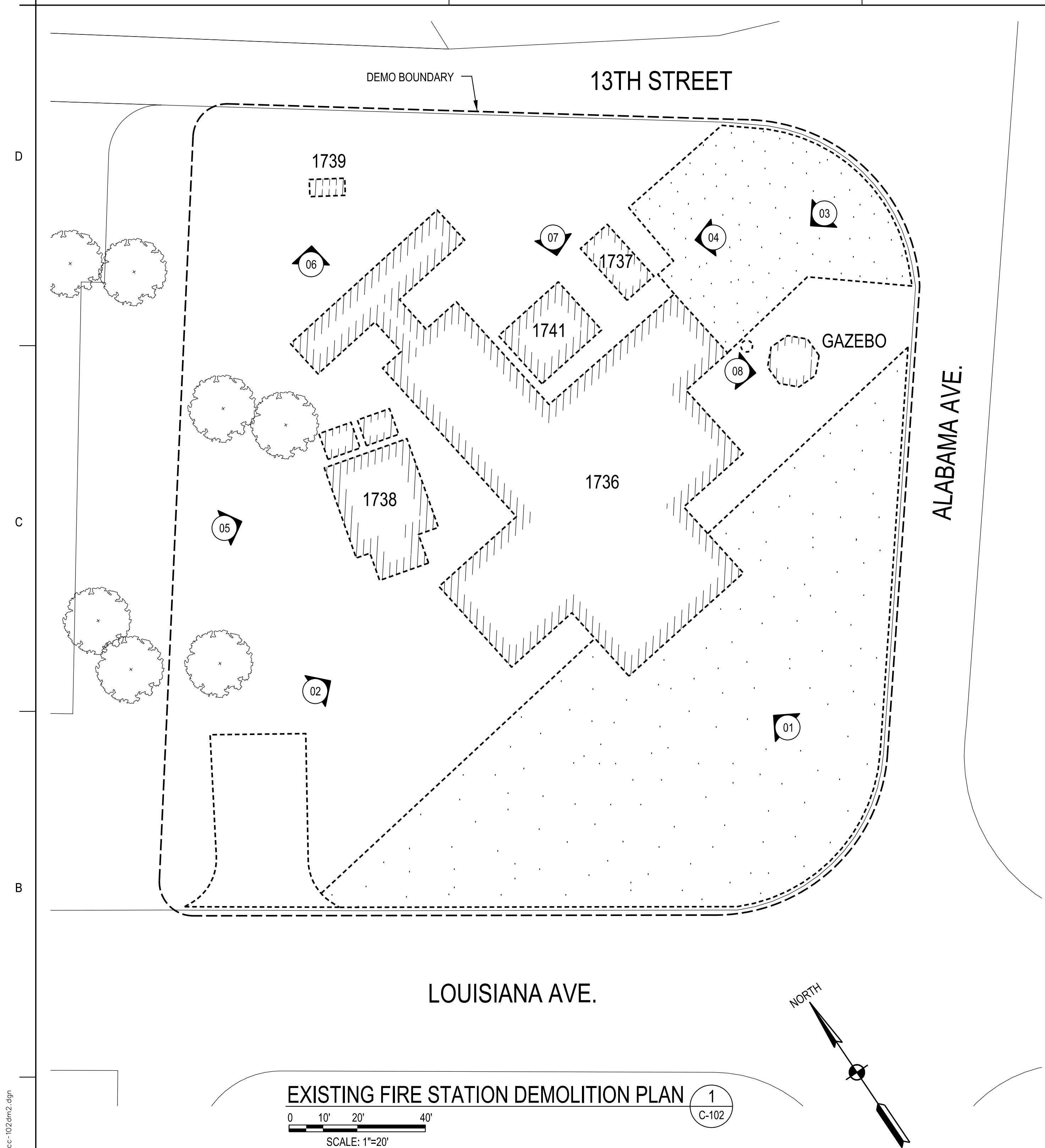
FORT POLK, LOUISIANA  
FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220  
PROJECT LOCATION PLAN

Sheet  
reference  
number:  
**G-002**









GENERAL DEMOLITION NOTES:

- ALL DEMOLITION WORK SHALL CONFORM TO THE REQUIREMENTS OF ALL FEDERAL, STATE, AND LOCAL CODE REQUIREMENTS.
- SPECIAL CARE SHALL BE GIVEN TO PROTECT AND MAINTAIN EXISTING UNDERGROUND UTILITY MAINS AND STORM WATER CONVEYANCES FROM HEAVY CRANES AND TRUCKS.
- CUT AND CAP SEWER LINES BEHIND CURB AND REMOVE. SERVICE WATER AND GAS LINES SHALL BE CUT AND CAPPED AT MAINS AND EVERYTHING FOUND WITHIN BOUNDARY REMOVED.
- ALL UTILITY DEMOLITION SHALL BE PRECOORDINATED WITH THE CONTRACTING OFFICER TO PREVENT ANY DISRUPTION OF SERVICES TO BUILDINGS THAT ARE TO REMAIN.
- AFTER REMOVAL OF THE FLOOR SLAB AND GRADE BEAMS/FOOTINGS, BACKFILL AND COMPACT TO MATCH ADJACENT GRADE WITH NATIVE MATERIAL. SEED AND WATER THE DISTURBED AREA.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL COSTS ASSOCIATED WITH THE ADDITIONAL PROTECTION MEASURES REQUIRED BY CONSTRUCTION/DEMOLITION ACTIVITIES TO SAFEGUARD THE HEALTH, SAFETY, AND WELFARE OF THE PUBLIC.

- CONTRACTOR SHALL REMOVE AND TRANSPORT ALL DEMOLITION DEBRIS FROM THE SITE IN COVERED VEHICLES TO AN APPROVED OFFSITE LANDFILL SITE AT NO COST TO THE GOVERNMENT.
- CONTRACTOR SHALL TRANSPORT ALL CONSTRUCTION DEBRIS ALONG A ROUTE APPROVED BY THE CONTRACTING OFFICER AND POST AUTHORITIES.
- CONTRACTOR SHALL COORDINATE MAJOR DEMOLITION ACTIVITIES WITH THE CONTRACTING OFFICER WITH RESPECT TO THE NOISE LEVEL GENERATED BY THE DEMOLITION PROCESS.
- REFRIGERANTS SHALL BE RECLAIMED BY CERTIFIED TECHNICIAN IN ACCORDANCE WITH 40 CRF 82. THE RECLAIMED REFRIGERANTS SHALL BE RECYCLED.
- CONTRACTOR SHALL SAW CUT EXISTING CONCRETE AND ASPHALT TO MAINTAIN SHOULDERS ALONG 13TH STREET, ALABAMA AVENUE AND LOUISIANA AVENUE GAPS IN SHOULDER TO BE BACKFILLED AND COMPACTED WITH ROCK OR CRUSHED STONE.
- CONTRACTOR SHALL DEMOLISH ALL ELECTRICAL SERVICE POLES AND ANTENNA POLES ASSOCIATED WITH EXISTING FIRE STATION FACILITIES.
- CONTRACTOR SHALL DISCONNECT EXISTING BACKUP GENERATOR/TRANSFER SWITCH AND RETURN BACK TO GOVERNMENT/DPW.



01 BLDG 1736



03 BLDG 1736



05 BLDG 1738



07 BLDG 1741



02 BLDG 1736



04 BLDG 1737



06 BLDG 1739



08 GAZEBO



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of Engineers  
Fort Worth District

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Symbol	Description	D.O. NO.	Action	Date


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Dwn by: E. CHAVEZ	SA No.	
Reviewed by: K.M. NG	Contr. No.	
Submitted by: KUNG M. NG, PE	File name: 11/11/2011	
ENGINEER	Plot scale: AS SHOWN	

FORT POLK, LOUISIANA FIRE AND EMERGENCY SERVICES CENTER PROJECT NO. 017220 EXISTING FIRE STATION DEMOLITION PLAN
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Sheet reference number: C-102
Sheet 4 of 21






U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS	Designed by: M. PEREZCZA	Date: NOVEMBER 2011	Rev.
	Dwn by: E. CARVEZ	Sd No.	
	Reviewed by: K.M. NG	Cont No.	
	K. M. NG & ASSOCIATES, INC.  10000 W. FORT WORTH AVENUE SUITE 200 FORT WORTH, TEXAS 76120 TEL: 817.335.3888 FAX: 817.335.3889 WWW.KMNG.COM	Submitted by: KUNG M. NG, PE	File name: DESIGNATED ENGINEERING FIRM #42

FORT POLK, LOUISIANA  
FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220  
PAVING SITE PLAN

Sheet  
reference  
number:  
**C-104**

Sheet 6 of 21

100

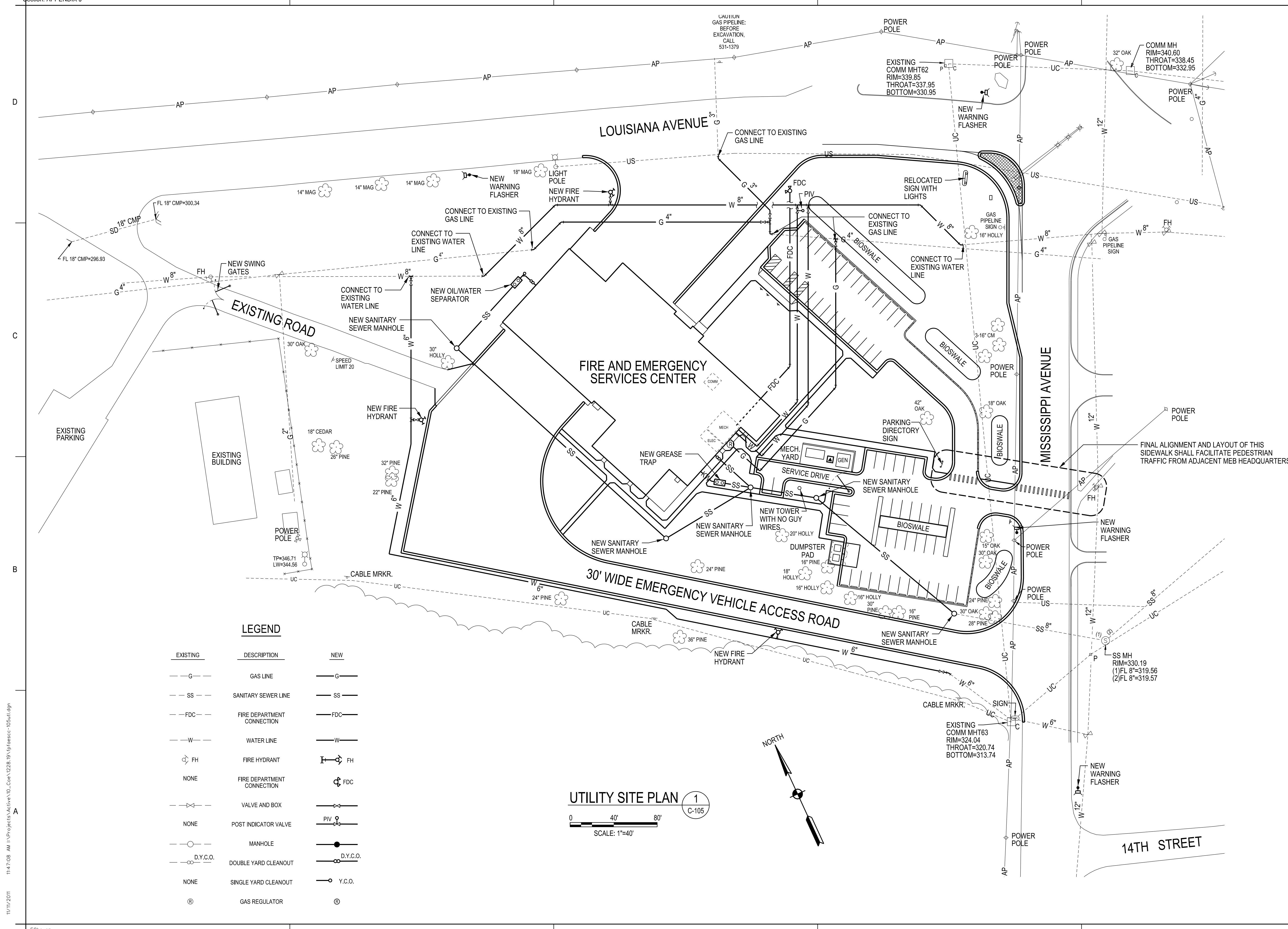
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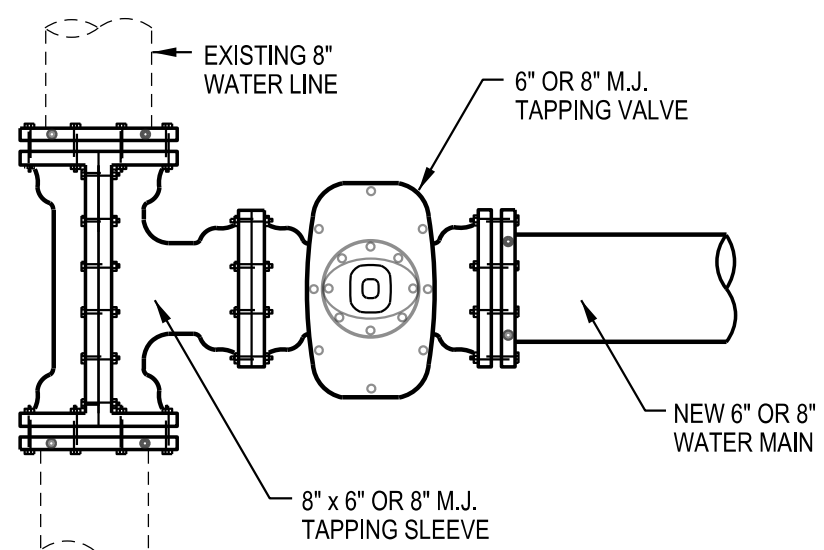


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**C-105**

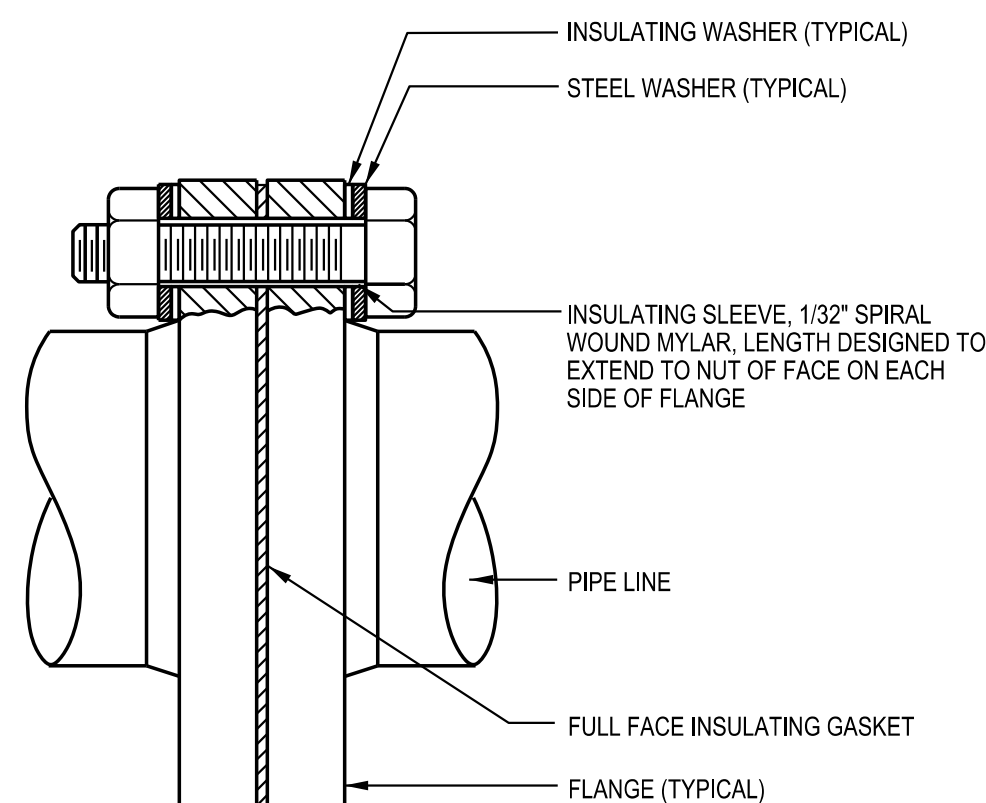
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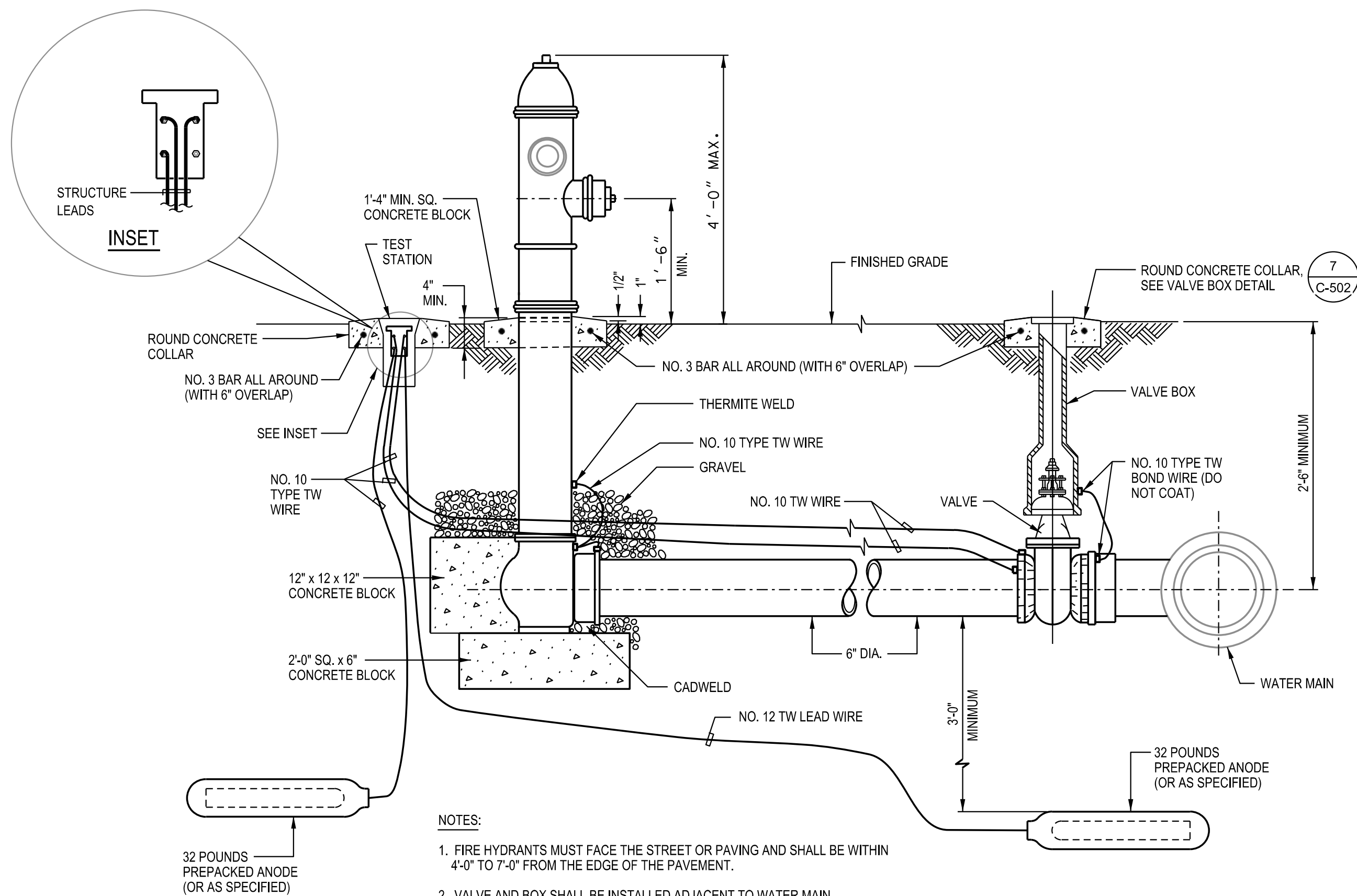
**WATER LINE CONNECTION** 5  
NO SCALE C-50



- NOTES:**
1. ABOVE GRADE INSULATING FLANGE INSTALLATION SHOWN.
  2. FOR BURIED OR SUBMERGED INSULATING FLANGE INSTALLATION DO NOT INSTALL INSULATING WASHER ON PROTECTED OR NEW SIDE OF FLANGE.
  3. COAT BURIED OR SUBMERGED INSULATED FLANGES WITH COLD APPLIED COLD TAR MASTIC AFTER ASSEMBLING JOINT AND WRAP WITH A BUTYL RUBBER ADHESIVE, POLYETHYLENE BACKED TAPE

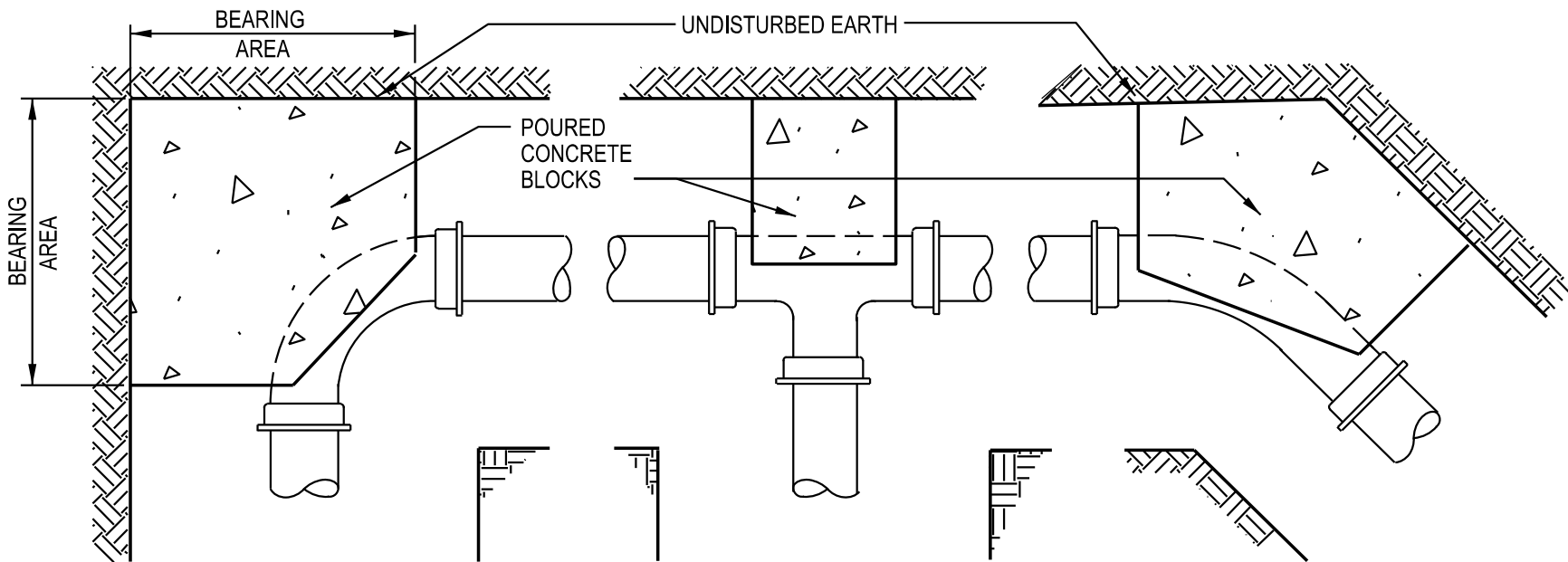
**TYPICAL INSULATING FLANGE** 6  
NO SCALE C-502

- NOTES:**
1. ALL BURIED METALLIC, WATER, FIRE PROTECTION SYSTEMS, SANITARY SEWER FORCE MAINS VALVES, FITTINGS, BUILDING RISERS, AND BUILDING STUB-OUTS SHALL HAVE CATHODIC PROTECTION AND A BONDED COATING.
  2. THERMITE WELD SHALL HAVE A EXOTHERMIC WELD CAP AND COATING INSTALLED.
  3. A NO. 10 TRACER WIRE SHALL BE INSTALLED OVER WATER LINES, FIRE PROTECTION SYSTEMS, AND SANITARY SEWER FORCE MAINS. WIRE SHALL BE TAPED TO LINES EVERY 30 FEET AND SHALL BE CONTINUOUS AND ACCESSIBLE ABOVEGROUND AT VALVE AND BUILDING RISERS.
  4. WATER MAINS SHALL BE C-900 PIPE.



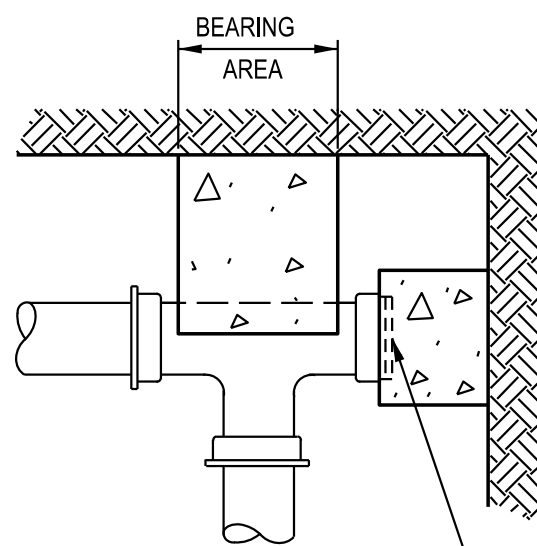
- NOTES:**
1. FIRE HYDRANTS MUST FACE THE STREET OR PAVING AND SHALL BE WITHIN 4'-0" TO 7'-0" FROM THE EDGE OF THE PAVEMENT.
  2. VALVE AND BOX SHALL BE INSTALLED ADJACENT TO WATER MAIN.
  3. ENSURE THAT THE WEEP HOLES FOR THE FIRE HYDRANT ARE NOT COVERED UP BY THE CONCRETE THRUST BLOCKS.
  4. SOIL RESISTIVITY IS APPROXIMATELY 2000 OHMS/CM (FIELD VERIFY).

**TYPICAL FIRE HYDRANT SETTING** 1  
NO SCALE C-502



BEARING AREA OF BLOCK IN SQUARE FEET					
FITTING SIZES	TEE AND END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
6"	3.6	5.4	2.5	1.5	0.8
8"	6.3	8.9	4.8	2.5	1.3

<u>SOIL BEARING PRESSURE</u>	<u>MULTIPLIER</u>
1000	2.0
1500	1.33
2000	1.0
3000	0.67

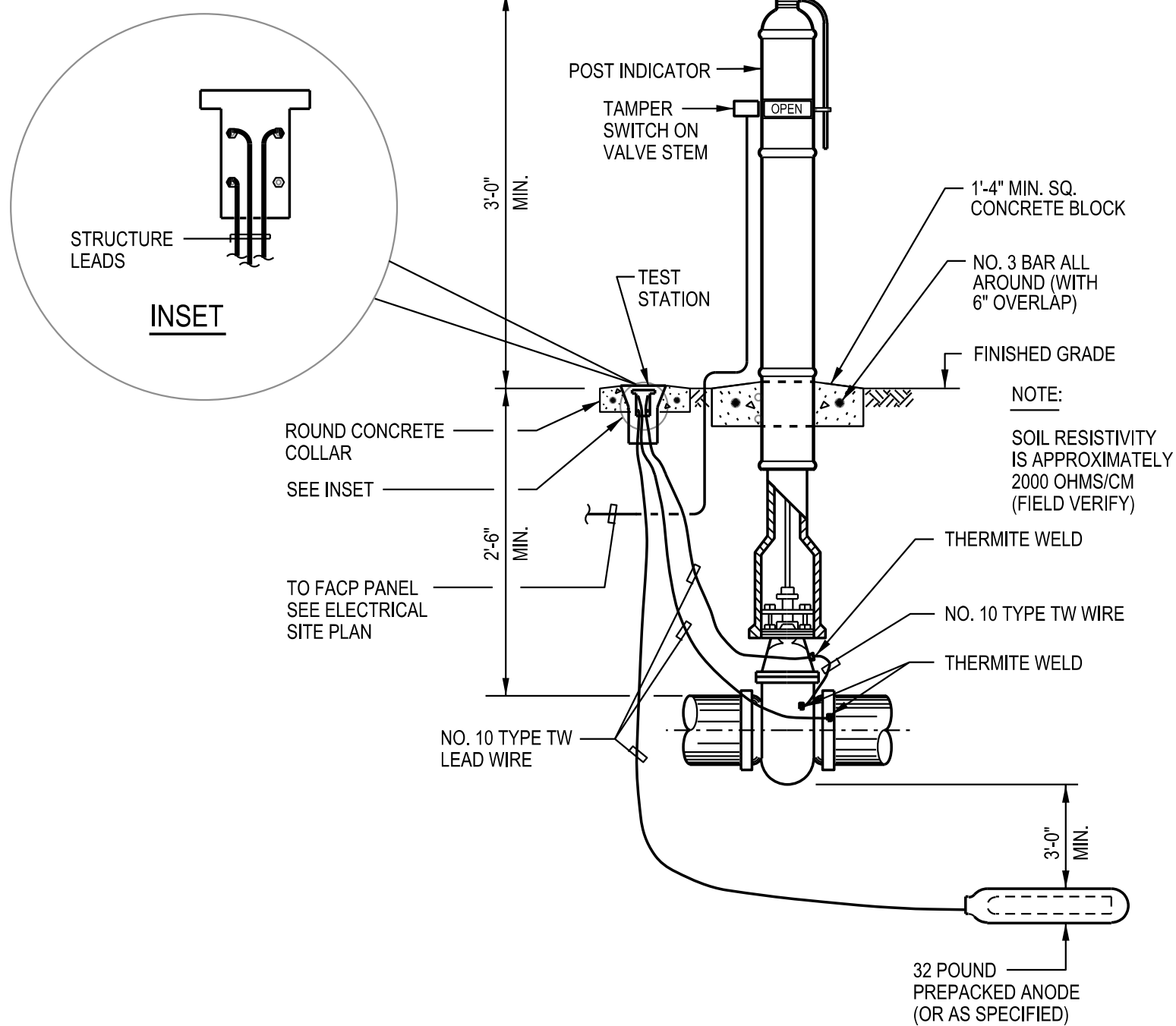


PLACE DOUBLE LAYER OF TAR -  
PAPER BETWEEN CONCRETE  
BLOCKING AND PLUG TO PERMIT  
EASY REMOVAL FOR FUTURE  
EXTENSION OF WATER MAIN

THRUST BLOCK DETAILS

NO SCALE

3  
C-502

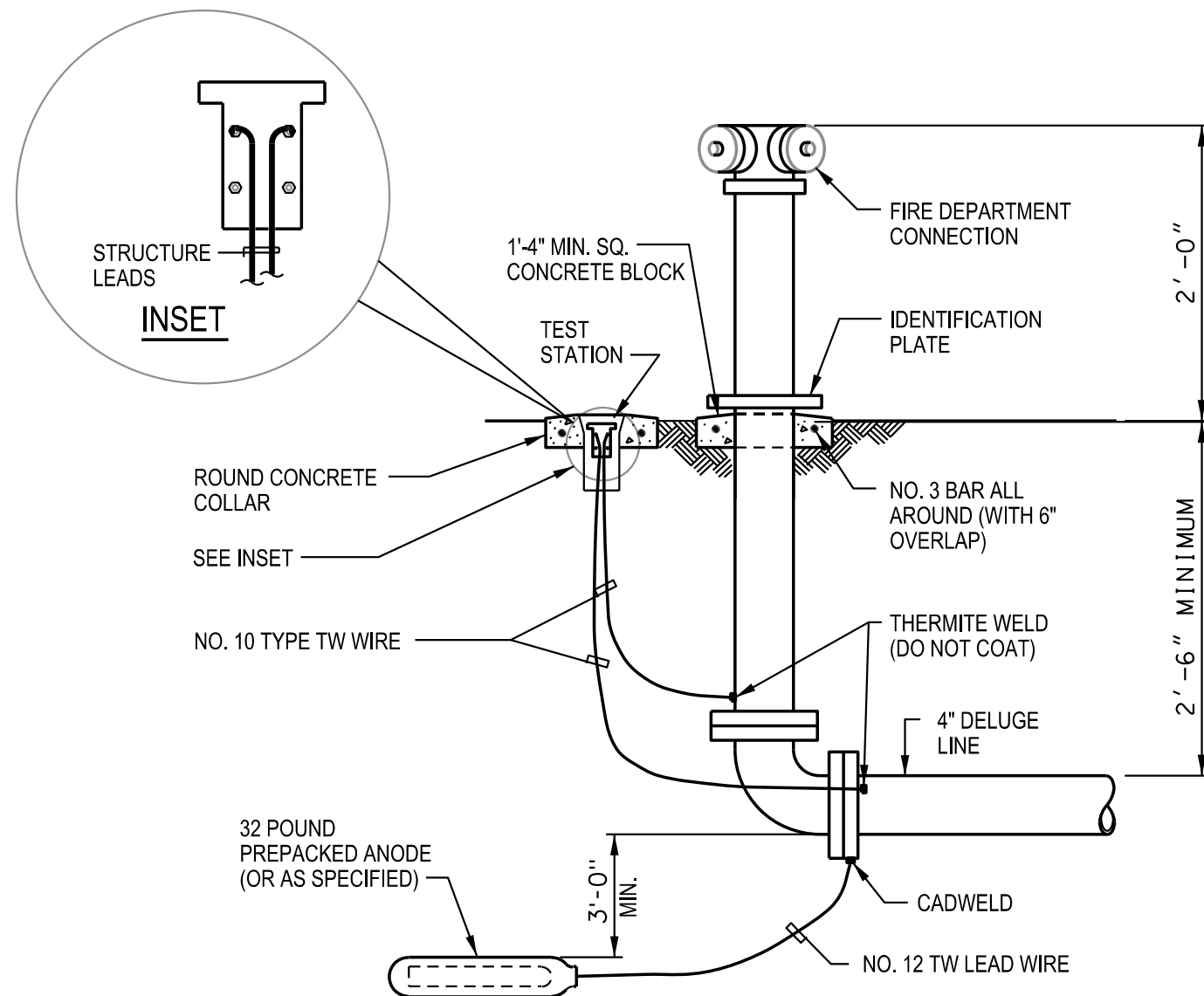


POST INDICATOR VALVE

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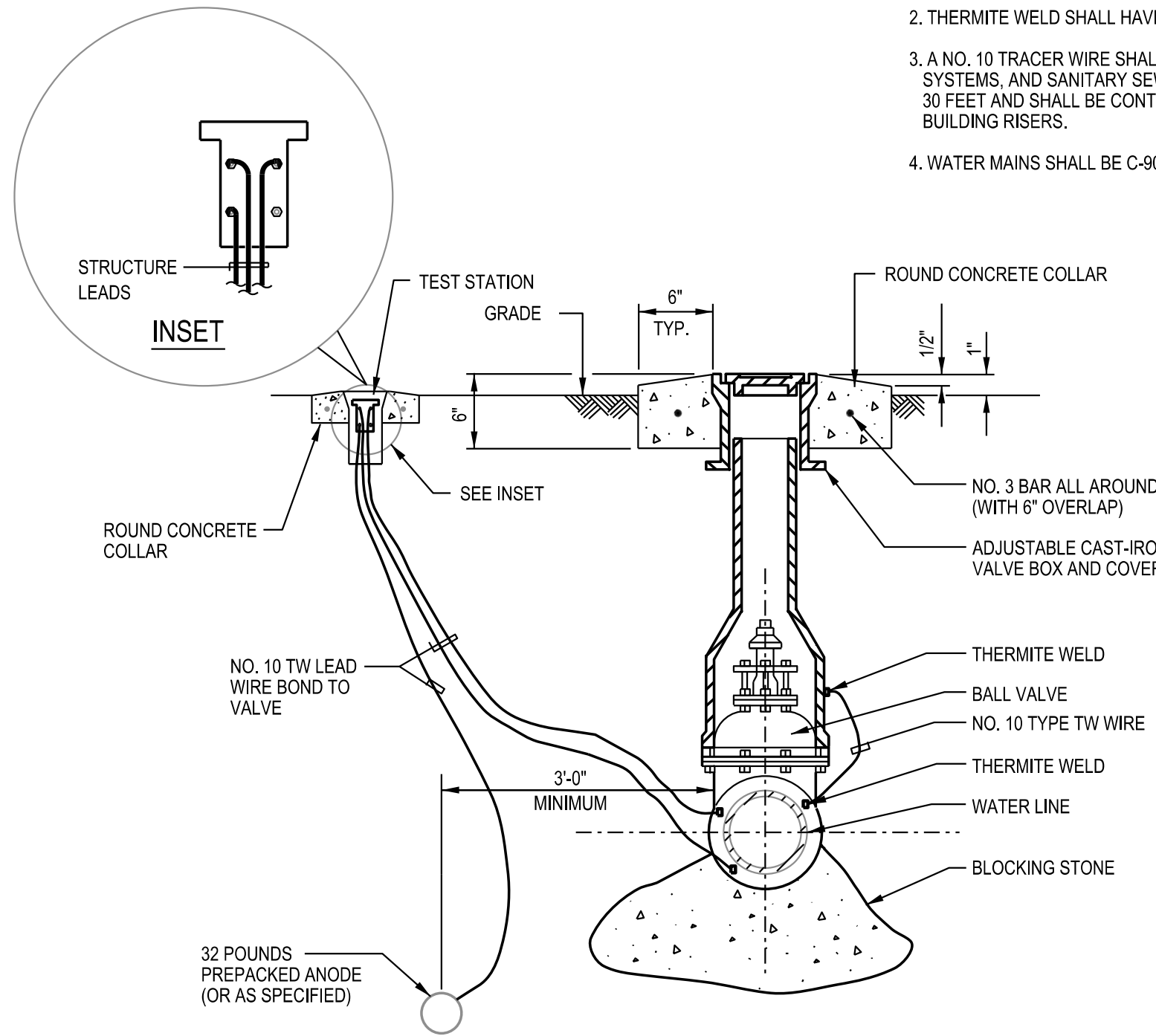
NO SCALE

2  
C-502



# FIRE DEPARTMENT CONNECTION

NO SCALE




VALVE AND BOX DETAIL

NO SCALE

7  
C-502

[illegible]

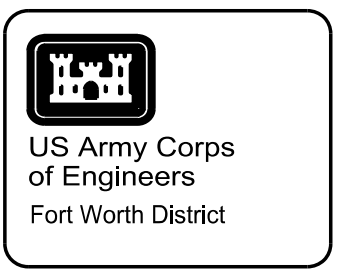
<b>U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS</b>	Designed by:	M. FIERZKA	Date:	NOVEMBER 2011	Rev:
	Dwn by:	E. CHWIEZ	Sd No.		
<b>K. M. NG &amp; ASSOCIATES, INC.</b>  <b>CONSULTING ENGINEERS</b> TEXAS REGISTERED ENGINEERING FIRM #462	Reviewed by:		Contr. No.		
	Submitted by:	K.M. NG	File name:		
	KUNG M. NG, PE		Proj. date:	11/11/2011	AS SHOWN
				Proj. scale:	ENGINEER

FORT POLK, LOUISIANA  
FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220  
UTILITY DETAILS

Sheet  
reference  
number:  
**C-502**

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FINAL RFP  
SUBMITTAL  
NOT FOR  
CONSTRUCTION

Symbol	Description	D.O. NO.	Action	Date

U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS	Designed by: M. PIERZICA	Date: NOVEMBER 2011	Rev:
	Dwn by: E. CHAVEZ	SA No.	
	Reviewed by: K.M. NG	Contr. No.	
	Submitted by: KUNG M. NG, PE ENGINEER	File name: 11/11/2011	Plot scale: AS SHOWN

FORT POLK, LOUISIANA FIRE AND EMERGENCY SERVICES CENTER PROJECT NO. 017220	SANITARY SEWER DETAILS
--	------------------------

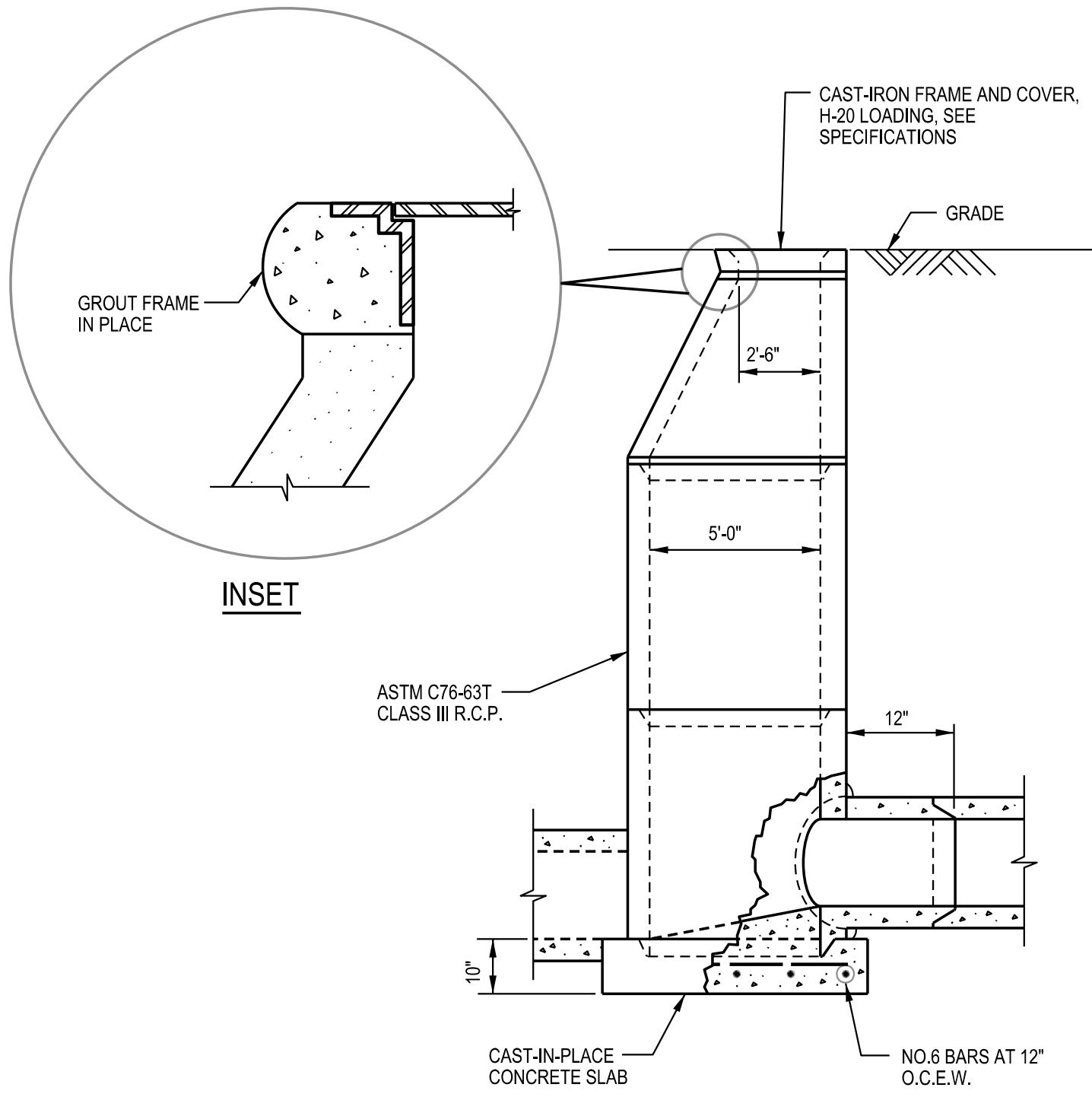
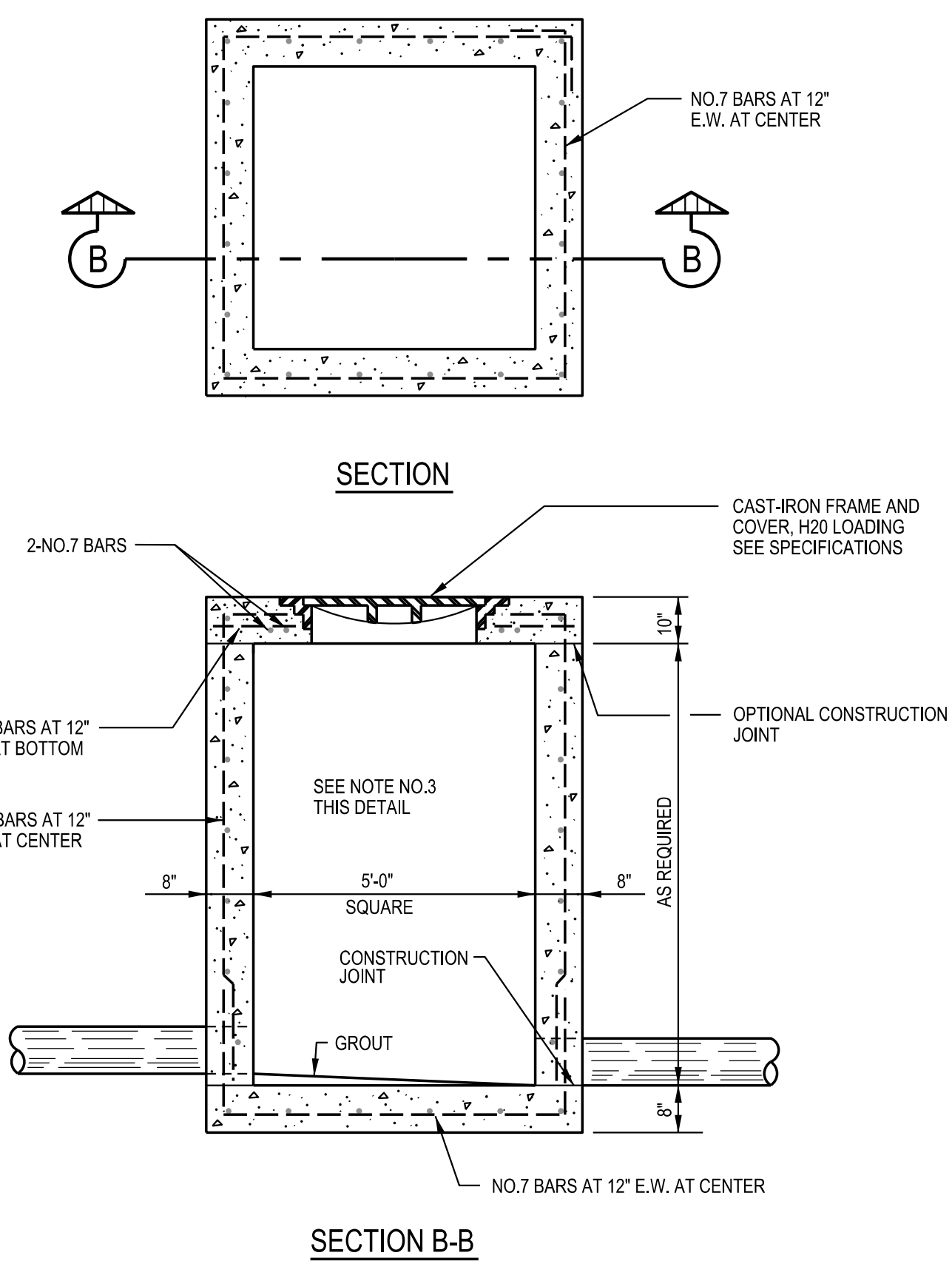
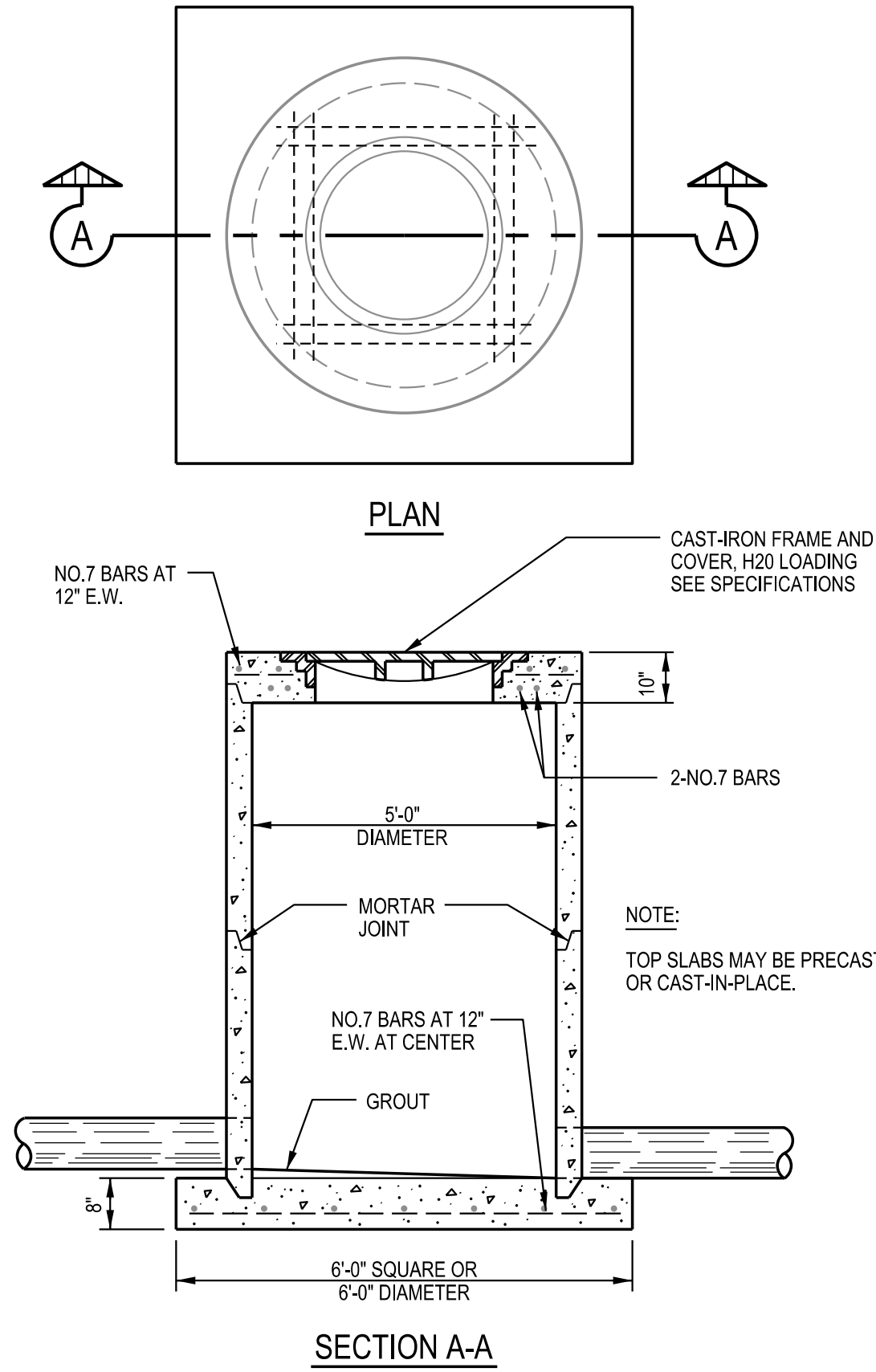
Sheet reference number: <b>C-503</b>
Sheet 10 of 21

D

C

B

A



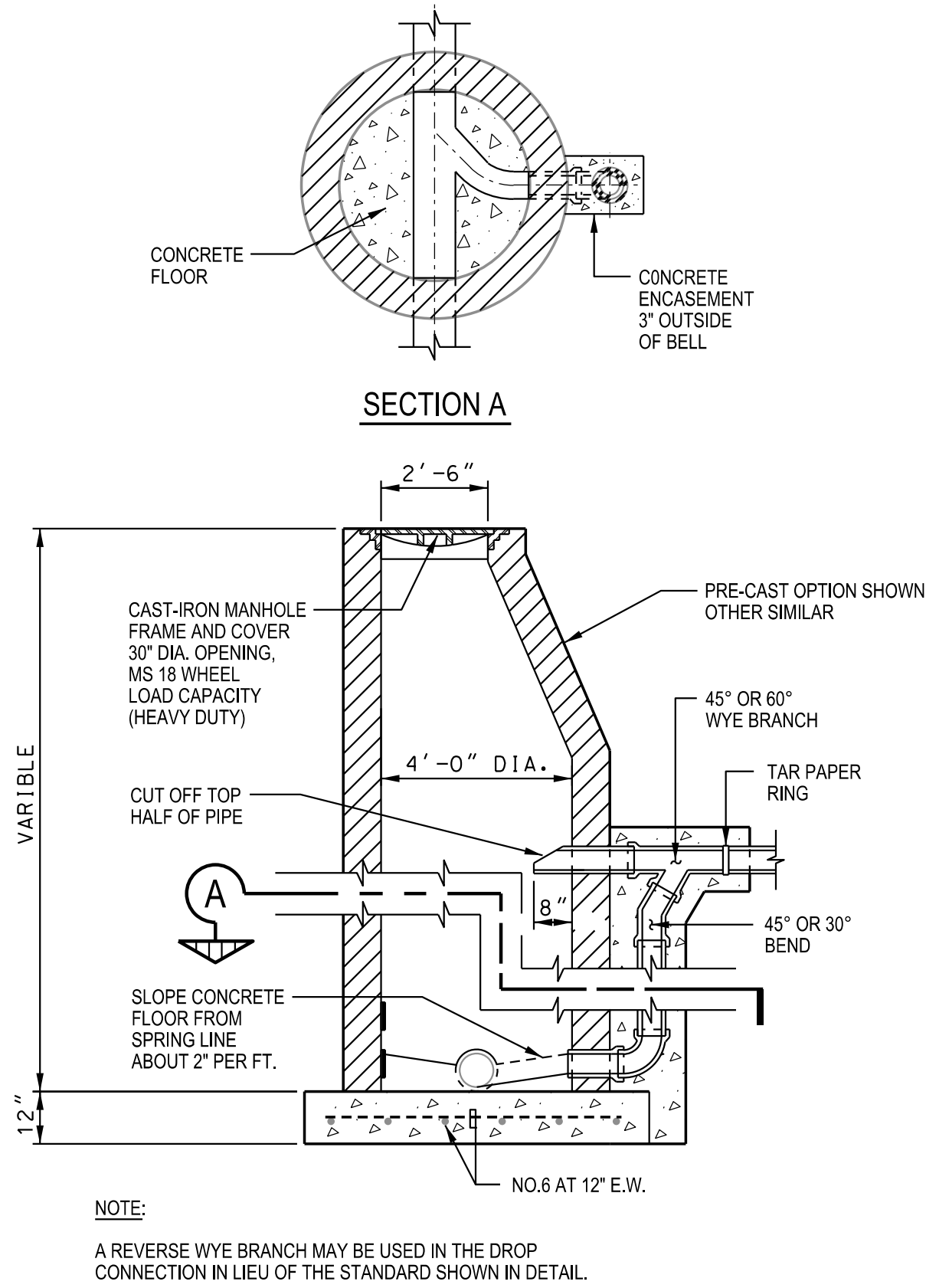
NOTES FOR MANHOLE DETAILS:

- CAST-IN-PLACE CONCRETE SHALL HAVE MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
- ALL LAPS AND EXTENSION OF REINFORCING BARS SHALL BE 30 DIAMETER MINIMUM EXCEPT AS OTHERWISE NOTED.
- GROUT SHALL BE PLACED IN MANHOLES AS INDICATED ON THIS DRAWING.

SANITARY SEWER MANHOLE DETAILS

NO SCALE

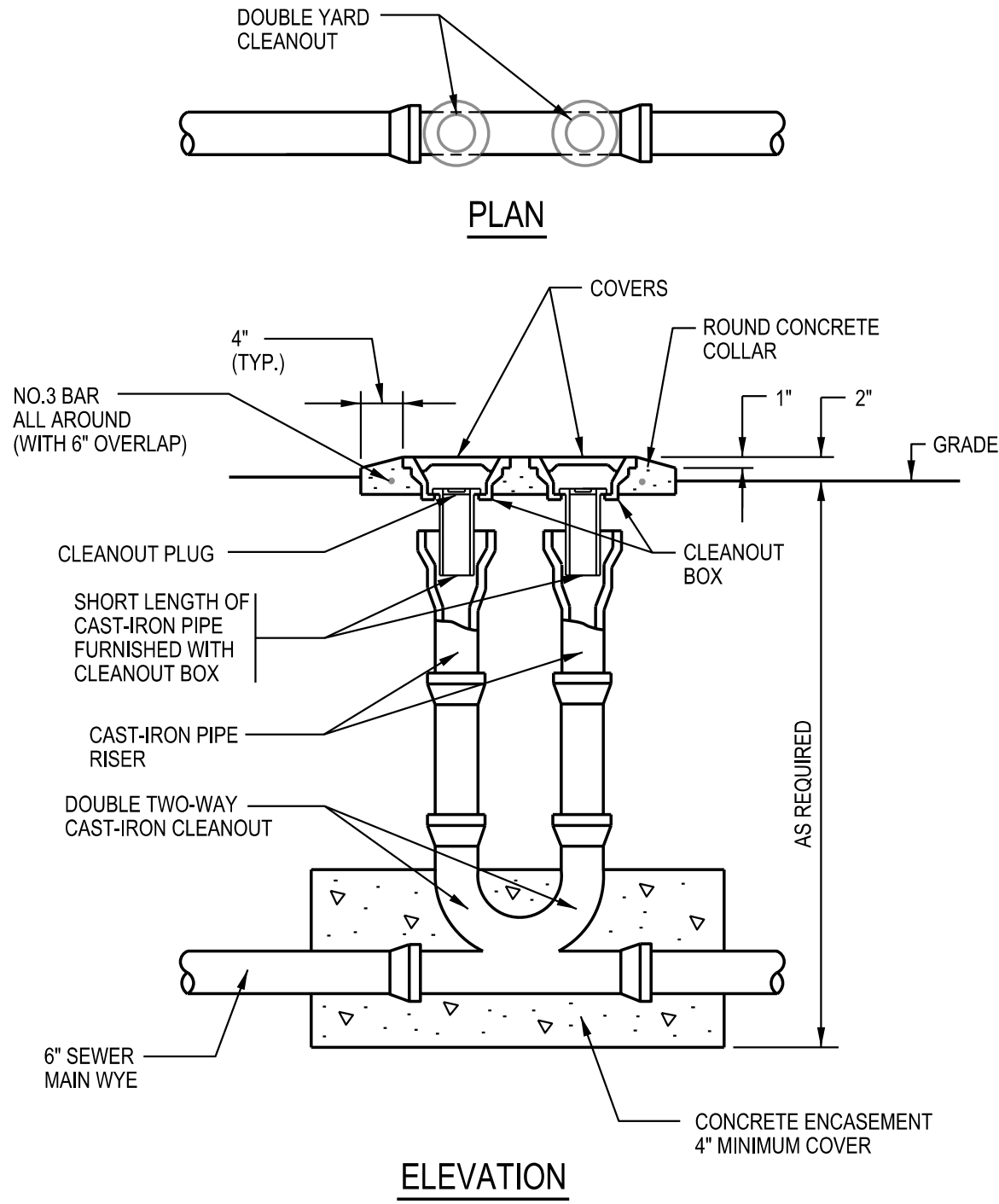
1  
C-503



DROP TYPE SEWER MANHOLE

NO SCALE

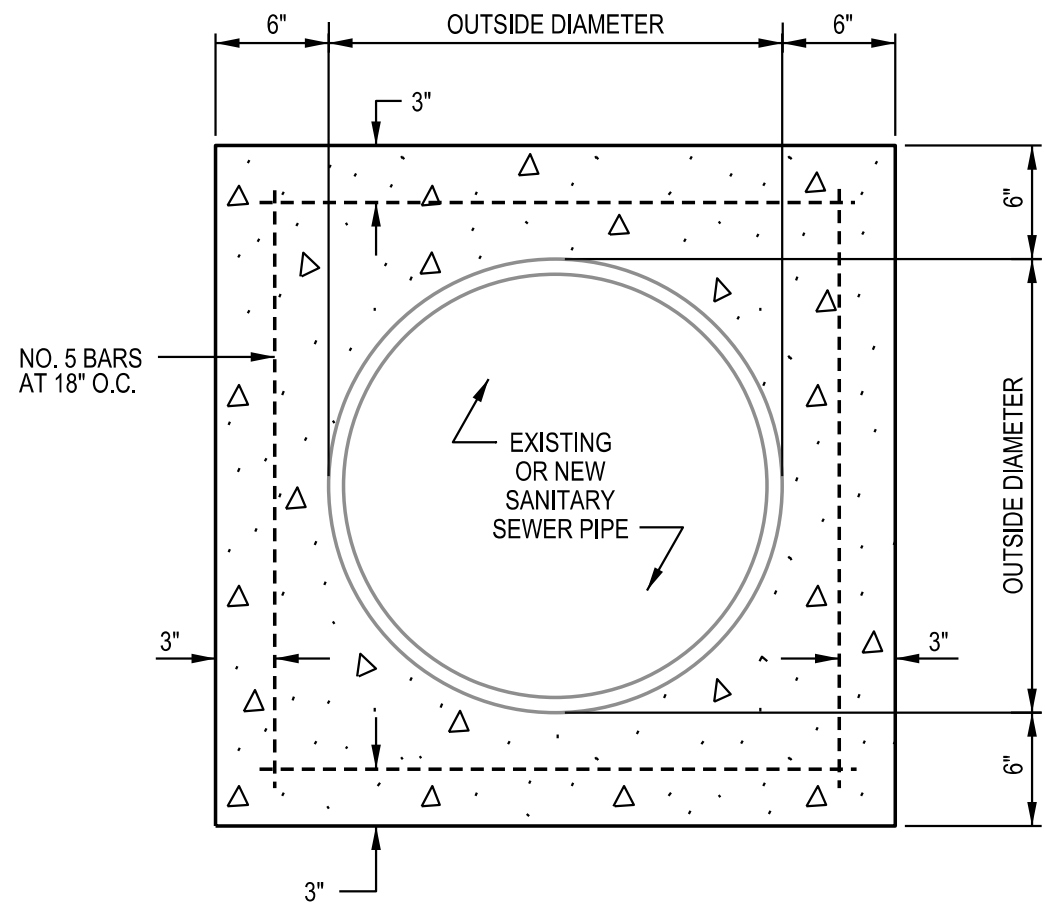
2  
C-503



TYPICAL DOUBLE YARD CLEANOUT DETAIL

NO SCALE

3  
C-503




CONCRETE ENCASEMENT DETAIL

NO SCALE

4  
C-503

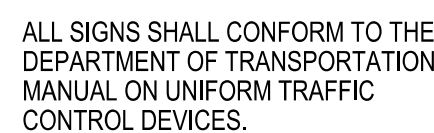
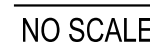
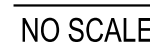
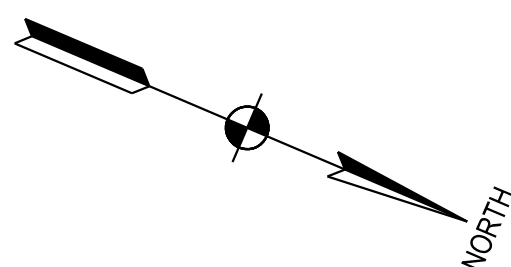
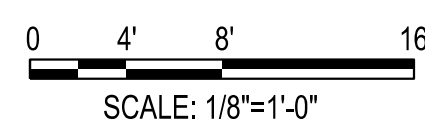
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<b>U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS</b>	Designed by: <b>M. PIETRZKA</b>	Date: <b>NOVEMBER 2011</b>	Rev:
	Drawn by: <b>E. CHAVEZ</b>	Sd No.	
<b>K. M. NG &amp; ASSOCIATES, INC.</b>  CONSULTING ENGINEERS 10000 W. 10th Street, Suite 100 TOMBALL, TEXAS 77480 TEXAS REGISTERED ENGINEERING FIRM #462	Reviewed by:	Cont No.	
	Submitted by:		Title number:
	<b>KUNG M. NG, PE</b> <b>ENGINEER</b>		Date: <b>11/11/2011</b> Plot scale: <b>AS SHOWN</b>

FORT POLK, LOUISIANA  
FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220  
HANDICAPPED PARKING  
PLAN AND DETAILS

Sheet  
reference  
number:  
**C-504**

Sheet 11 of 21

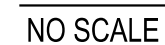


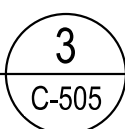
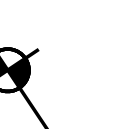
NO SCALE



NOTE:

APPROVED STANDARD MANUFACTURED WHEEL STOP MAY BE USED.





Sheet  
reference  
number:  
**C-505**  
Sheet 12 of 21



1. 3" O.D. TUBING SHALL HAVE 1/4" THICK WALL. TUBING SHALL BE WELDED MOISTURE TIGHT TO PIVOT PIPE AT CENTERLINE OF SUPPORT ASSEMBLY.
2. 2" O.D. TUBING SHALL HAVE 1/4" THICK WALL. TUBING SHALL BE WELDED MOISTURE TIGHT TO 3" O.D. TUBING ON L AS SHOWN.
3. SUPPORT PIPE SHALL BE MACHINE TURNED TO 6 1/8" O.D. x 5/16" WALL FROM A 6 1/4" O.D. x 3/8" WALL TUBE.
4. ALL TUBING SHALL BE COLD DRAWN SEAMLESS STEEL.
5. ALL WELDS SHALL BE 1/4" UNLESS OTHERWISE NOTED.
6. GATE ASSEMBLIES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH SECTION 05500 MISCELLANEOUS METALS OF THE SPECIFICATIONS.

6. GATE ASSEMBLIES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH SECTION 05500 MISCELLANEOUS METALS OF THE SPECIFICATIONS.
7. LOCK PIN SHALL BE 3/4" DIAMETER DRAWBAR PIN WITH 4" USABLE LENGTH (2 REQUIRED). LOCK PIN SHALL BE SECURED TO PIVOT PIPE WITH SAFETY SNAP CHAIN.
8. INSTALL GALVANIZED EYE BOLT WITH 1/4" PROOF COIL CHAIN AND SAFETY SNAP ON GUARD POST TO SECURE GATE LEAF WHEN IN THE OPEN POSITION. THE CONTRACTOR SHALL DETERMINE EXACT LOCATION AND CHAIN LENGTH (APPROXIMATE 3'-0" LONG).
9. STEEL PIPE FOR GATE AND POSTS SHALL CONFORM TO SECTION 05500 MISCELLANEOUS METALS OF THE SPECIFICATIONS.
10. SINGLE SWING GATE SHALL BE PART OF ATFP BOUNDARY.

[illegible]

U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS	Designed by: M. PIERZICA	Date: NOVEMBER 2011	Rev.
	Drawn by: E. CHAVEZ	S&I No.	
	Reviewed by: K.M. NG	Comp No.	
	Submitted by: KUNG M. NG, PE ENGINEER	File name: Project name: Project date: Project scale:	11/1/2011 AS SHOWN

FORT POLK, LOUISIANA  
FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220  
SWING GATE DETAILS

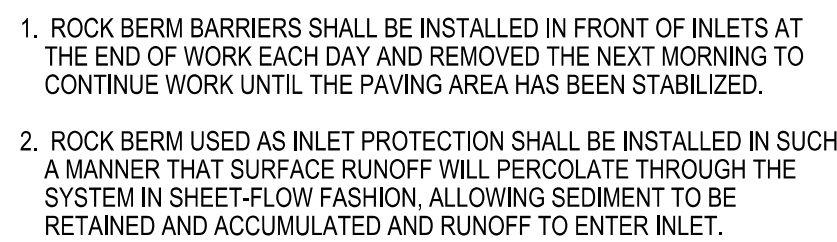
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number:  
**C-506**





1. STONE SIZE: 3" TO 5" OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE, BUT NOT LESS THAN 60'-0".
3. THICKNESS: NOT LESS THAN 8 INCHES.
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
5. WASHING: WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENTS SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATER COURSE USING APPROPRIATE METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND OR ELIMINAT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO ROADWAY SHALL BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE SHALL BE PROPERLY GRADED OR A DRAINAGE SWALE SHALL BE INCORPORATED TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

## NO SCALE



NO SCALE



AFTER COMPACTION-  
NO WASHOUTS

## STATIC SLICING



NO MORE THAN 24" OF A 36"  
FABRIC IS ALLOWED ABOVE  
GROUND.

## SUPPORT POST DETAIL

NO SCALE

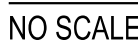


SILT FENCE SHALL BE INSTALLED USING A NARROW CUSTOM-SHAPED BLADE AT LEAST 10 INCHES PENETRATED INTO THE GROUND AND SIMULTANEOUSLY PULLING SILT FENCE FABRIC INTO THE OPENING CREATED AS THE BLADE IS PULLED THROUGH THE GROUND. AFTER INSTALLING THE FABRIC, THE DISRUPTED SOIL SHALL BE COMPACTED ON BOTH SIDES OF FABRIC.

1. INSTALL SILT FENCE ACROSS EXISTING DRAINAGE AT LOCATIONS SHOWN. MAINTAIN THE SILT FENCE FOR THE DURATION OF THE PROJECT.
2. INSTALL A MINIMUM OF 50'-0" OF SILT FENCE PARALLEL TO THE OPEN SEWER MAIN TRENCH AND MAINTAIN THE SILT FENCE AS LONG AS THE TRENCH IS OPEN.

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED AT A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST SHALL BE EMBEDDED A MINIMUM OF 12 INCHES.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN/SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TREATED (E.G.N PAVEMENT), WEIGHT FABRIC FLAP WITH WASHED GRAVEL ON UPHILL SIDE TO PREVENT FLOW UNDER FENCE.
3. THE TRENCH SHALL BE A MINIMUM OF 6 INCHES DEEP AND A MINIMUM OF 6 INCHES WIDE TO ALLOW FOR THE SILT FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHALL BE SECURELY FASTENED TO EACH STEEL SUPPORT POSTS OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6" INCHES. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER SO AS NOT TO CONTRIBUTE TO ADDITIONAL SILTATION.

1. USE ONLY OPEN GRADED ROCK 4-8 INCHES DIAMETER FOR STREAM FLOW CONTROL; USE OPEN GRADED ROCK 3-5 INCHES DIAMETER FOR OTHER CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE NETTING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 1/32 INCH.
3. THE ROCK BERM SHALL BE INSPECTED WEEKLY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN WIRE SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED. DUE TO SILT ACCUMULATION ALONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 12 INCHES, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF AT AN APPROVED SITE AND IN A MANNER AS TO NOT CREATE A SILTATION PROBLEM.
5. DAILY INSPECTION SHALL BE MADE ON SERVICE ROCK BERMS; SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES 6 INCHES.
6. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.



1. SEDIMENT LOG SHALL BE BIODEGRADABLE OR NON-BIODEGRADABLE MATERIAL.
2. SEDIMENT LOG SHALL BE WEED SEED FREE.
3. SEDIMENT LOG SHALL BE 12-INCH DIAMETER OR LESS.
4. SEDIMENT LOG SHALL BE PLACED IN DITCH BOTTOMS, SWALES, WATERWAYS, OR BARE SOILS TURF REINFORCEMENT BLANKETS, AND AROUND CATCH BASIN.
5. SEDIMENT LOG SHALL BE SECURED AS RECOMMENDED BY MANUFACTURER.

1. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCES AS SHOWN ON THE PLANS.
2. INSTALL SILT FENCES AS SHOWN ON THE PLANS AND WHEREVER STORM WATER COLLECTS OR EXISTS THE PROJECT. INSTALL ROCK BERM DIKES AT ALL CURB INLETS AS SHOWN ON THE PLANS.
3. BACKFILL THE UTILITY TRENCHES IN A TIMELY MANNER TO MINIMIZE EROSION.
4. SOIL STOCKPILES LEFT OVER A PERIOD OF SEVEN DAYS SHALL BE COVERED WITH SOIL RETENTION BLANKETS AND SILT FENCE SHALL BE ERECTED AROUND THE PERIMETER OF STOCKPILE MATERIAL.
5. WHEN THE PROJECT AREA HAS STABILIZED AND ALL CONSTRUCTION IS COMPLETED AND ACCEPTED, REMOVE ALL CONTROLS.
6. REFERENCE SPECIFICATION SECTION 01356-BASIC STORM WATER POLLUTION PREVENTION PLAN FOR REQUIREMENTS.
7. FINAL STABILIZATION IS ACCOMPLISHED WHEN VEGETATION AT THE DISTURBED AREAS HAS ACHIEVED 70% OF THE BACKGROUND NATIVE VEGETATION.
8. PROVIDE STRUCTURAL DETAILS NO. 2, 2OR NO. 5 AT EXISTING STORM GRATES IN PROXIMITY OF THE DEMOLITION SITES.

FORT POLK, LOUISIANA  
FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220  
TEMPORARY EROSION SEDIMENT  
AND WATER POLLUTION  
CONTROL MEASURES

Sheet  
reference  
number:  
**C-507**



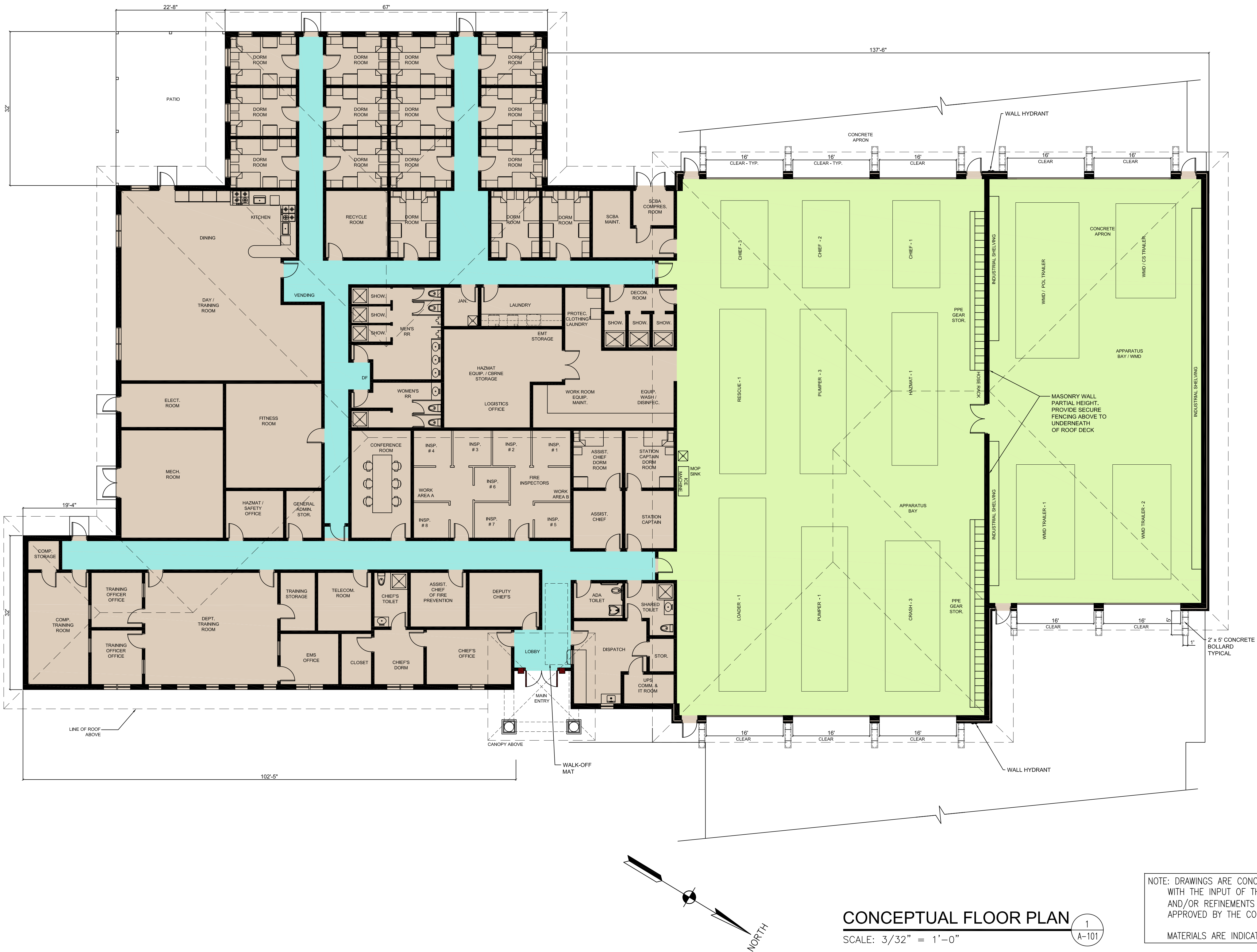


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K. M. NG & ASSOCIATES, INC. CORPS OF ENGINEERS FORT WORTH, TEXAS		Contract No.	W9126G-07-D-0005
		Dated by:	X. MUNOZ
		Reviewed by:	S. TOBIN
		Submitted by:	KUNG M. NG, PE
		File name:	C:\Users\Kung.M.Ng\Desktop\NG - 78291
		Project name:	EDATES
		Prior scale:	AS SHOWN
		Engineer:	ENGINEER

FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220  
CONCEPTUAL  
FLOOR PLAN

Sheet  
reference  
number:  
**A-101**



NOTE: DRAWINGS ARE CONCEPTUAL IN NATURE, AND DEVELOPED WITH THE INPUT OF THE USER AND CoS. ADJUSTMENTS AND/OR REFINEMENTS MAY BE MADE TO THE DESIGN AS APPROVED BY THE CONTRACTING OFFICER and CoS.

MATERIALS ARE INDICATED FOR AESTHETICS AND INTENT.



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\$DATES\$  
\$FILES\$  
\$TIMES\$

\$USERS\$

FINAL RFP  
SUBMITTAL  
NOT FOR  
CONSTRUCTION

Date	Action	D.O. NO.	Description	Symbol

U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS	Designed by: X. MUNOZ	Date: NOVEMBER 2011	Rev:
	Dwn by: X. MUNOZ	SA No.	
	Reviewed by: S. LOBIN	Contr. No. W9126G-07-D-0005	File name: \$DATES\$
	Submitted by: KUNG M NG PE ENGINEER	Project: \$DATES\$	Plot scale: AS SHOWN

FORT POLK, LOUISIANA

FIRE AND EMERGENCY SERVICES CENTER

PROJECT NO. 017220

CONCEPTUAL  
ELEVATIONS!

Sheet reference number: A-201
Sheet 17 of 21

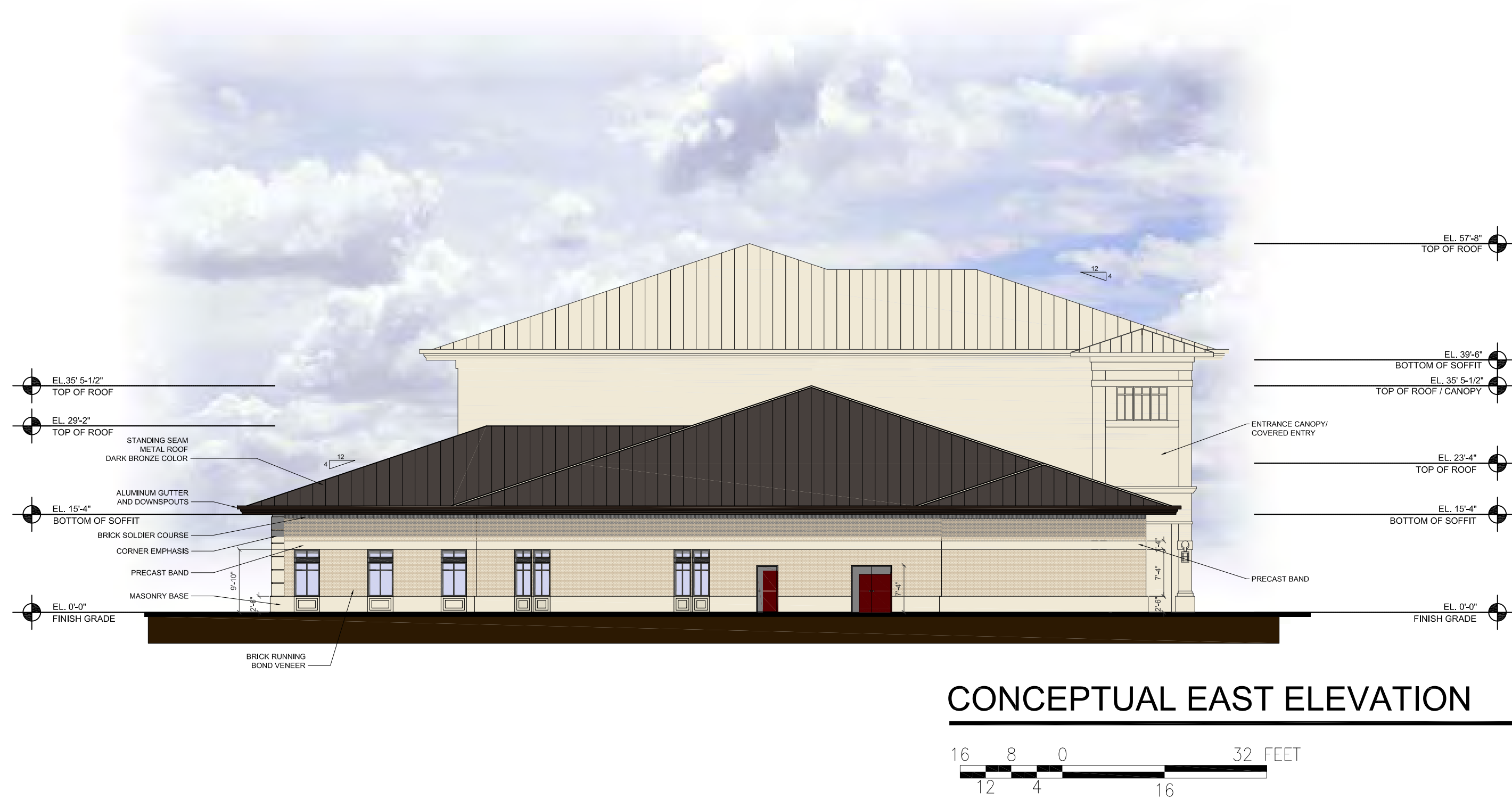
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Contr. No. W9126G-07-D-0005



## FIREMAN'S SCRAMBLE EXAMPLE

N.T.S.


2  
A-201



NOTE: DRAWINGS ARE CONCEPTUAL IN NATURE, AND DEVELOPED WITH THE INPUT OF THE USER AND CoS. ADJUSTMENTS AND/OR REFINEMENTS MAY BE MADE TO THE DESIGN AS APPROVED BY THE CONTRACTING OFFICER.

MATERIALS ARE INDICATED FOR AESTHETICS AND INTENT.

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 <b>K. M. NG &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS SAN ANTONIO, TEXAS 78201 TEXAS REGISTERED ENGINEERING FIRM # 442	A. INITIALS X. M/NOZ	S. SIGNATURE X. M/NOZ	S. DATE 07/26/2011
	R. REVIEWED BY S. TOBIN	C. CONTRACT NO. W9126G-07-D-0005	S. SCHEDULED BY S. TOBIN

FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220

CONCEPTUAL  
ELEVATIONS II

Sheet  
reference  
number:  
**A-202**



# CONCEPTUAL SOUTH ELEVATION



# CONCEPTUAL WEST ELEVATION

16 8 0 32 FEET

2  
A-202

NOTE: DRAWINGS ARE CONCEPTUAL IN NATURE, AND DEVELOPED WITH THE INPUT OF THE USER AND CoS. ADJUSTMENTS AND/OR REFINEMENTS MAY BE MADE TO THE DESIGN AS APPROVED BY THE CONTRACTING OFFICER.

MATERIALS ARE INDICATED FOR AESTHETICS AND INTENT.





MAIN ENTRANCE

SCALE: NONE

1  
A-301



SOUTH WEST ELEVATION

SCALE: NONE

3  
A-301



APPARATUS BAYS

SCALE: NONE

2  
A-301



AERIAL VIEW

SCALE: NONE

4  
A-301

NOTE: DRAWINGS ARE CONCEPTUAL IN NATURE, AND DEVELOPED WITH THE INPUT OF THE USER AND CoS. ADJUSTMENTS AND/OR REFINEMENTS MAY BE MADE TO THE DESIGN AS APPROVED BY THE CONTRACTING OFFICER and CoS.

MATERIALS ARE INDICATED FOR AESTHETICS AND INTENT.



US Army Corps  
of Engineers  
Fort Worth District

FINAL RFP  
SUBMITTAL  
NOT FOR  
CONSTRUCTION

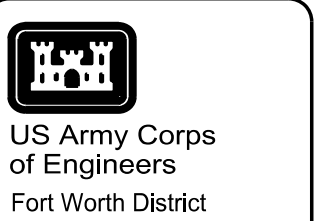
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Designed by: X. MUNOZ	Date: NOVEMBER 2011	Rev:
Dwn by: X. MUNOZ	SA No.	
Reviewed by: S. TUBIN	Contr. No. W9126G-07-D-0005	
Submitted by: KUNG M NG PE	File name: SDATES	
ENGINEER	Plot scale: AS SHOWN	

FORT POLK, LOUISIANA  
FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220  
CONCEPTUAL  
RENDERINGS

Sheet  
reference  
number:  
**A-301**  
Sheet 19 of 21





FINAL RFP  
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NOT FOR  
CONSTRUCTION

LEGEND:

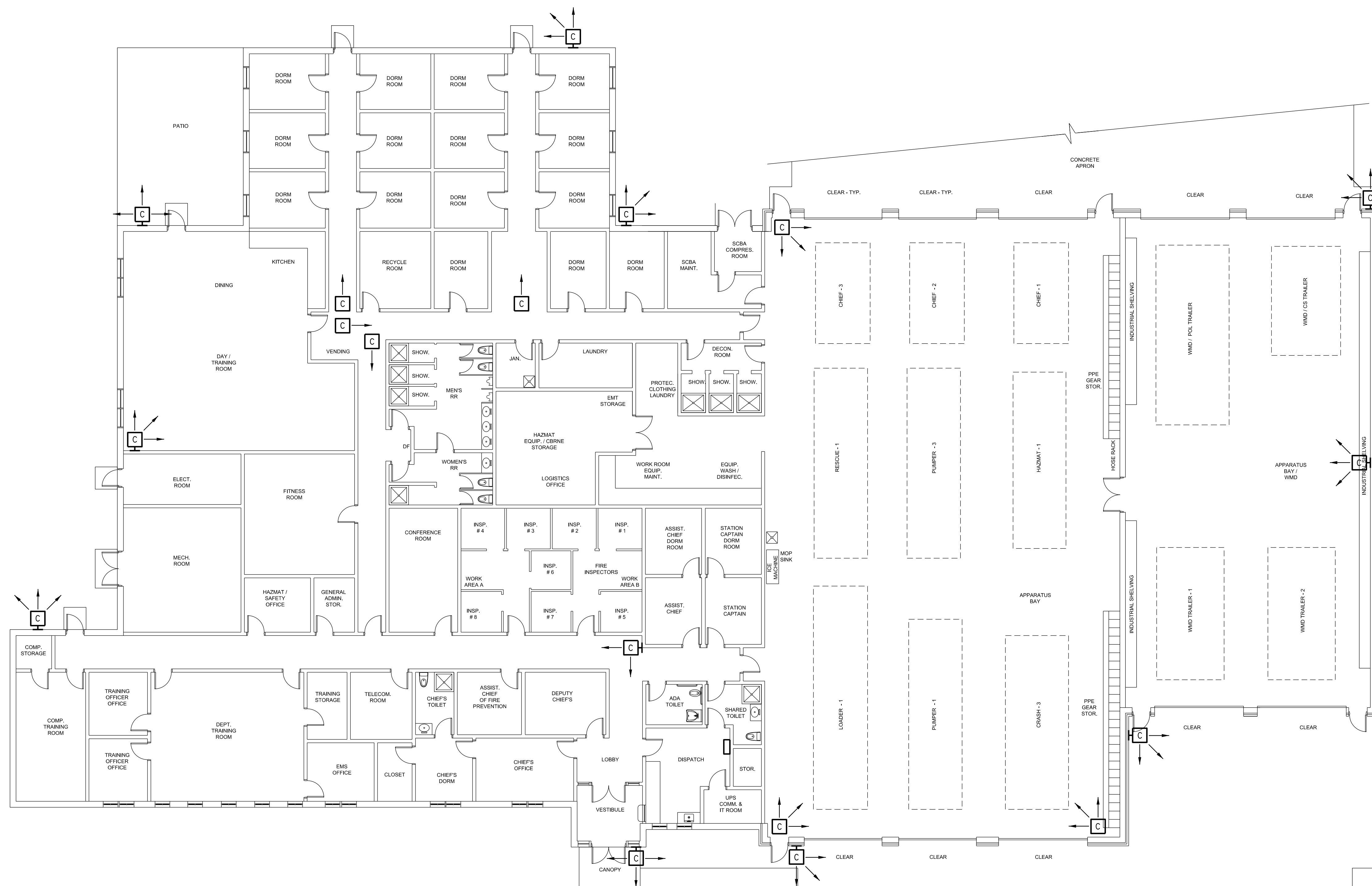
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PAN TV CAMERA
- CLOSED CIRCUIT  
TV CAMERA  
EQUIPMENT PANEL

Symbol	Description	D.O. NO.	Action	Date

U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS	Designed by: R. WILSON	Rev.:
	Dwn by: E. CRANEZ	SA No.
	Reviewed by: J. MAGEE	Conf. No.
	Submitted by: KUNG M. NG, PE	File name: 11/11/2011 Proj. Issue: AS SHOWN
K.M. NG & ASSOCIATES, INC. 1100 S. WILSON ST., SUITE 200 SAN ANTONIO, TEXAS 78201 TEAS REGISTERED ENGINEERING FIRM #42		

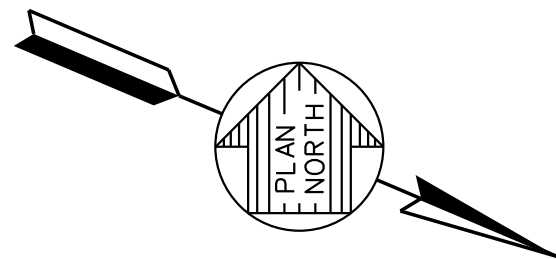
FORT POLK, LOUISIANA FIRE AND EMERGENCY SERVICES CENTER PROJECT NO. 017220 SECURITY CAMERA LAYOUT PLAN
--

Sheet reference number: E-101
Sheet 20 of 21




SECURITY CAMERA LAYOUT PLAN 1  
E-101

0 5' 10' 20'  
SCALE: 3/32"=1'-0"



[illegible]

<b>U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS</b>	Designed by: <b>R. WILSON</b>	Date: <b>NOVEMBER 2011</b>	Rev.
	Dwn by: <b>E. CANEZE</b>	Sol No.	
<b>K. M. NG &amp; ASSOCIATES, INC.</b>  10000 W. FORT WORTH AVENUE SUITE 200 FORT WORTH, TEXAS 76101 TEXAS REGISTERED ENGINEERING FIRM #442	Reviewed by: <b>J. MAGEE</b>	Contr. No.	
	Submitted by: <b>KUNG M. NG, PE</b>	File name:	File date: 1/11/2011













FORT POLK, LOUISIANA  
FIRE AND EMERGENCY SERVICES CENTER  
PROJECT NO. 017220  
FIRST-IN ALERT SYSTEM  
LAYOUT PLAN

Sheet  
reference  
number:  
**E-102**  
Sheet 21 of 21

Canto 11a



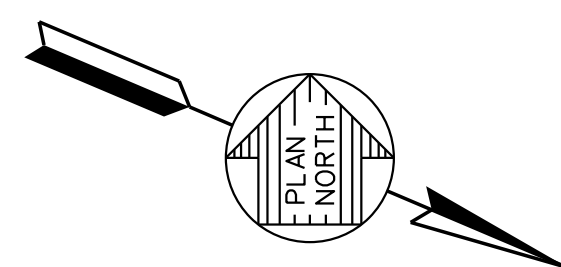
### FIRST-IN ALERT LEGEND

	DUAL HIGH POWERED AMPLIFIER
	OUTSIDE SATELLIGHT CONTROLLER
	SATELLIGHT CONTROLLER
	SATELLIGHT
	DORM REMOTE
	VIDEO MESSANGER
	SINGLE LINE MESSENGER
	DOOR BELL
	EMERGENCY SWITCH
	SPEAKER SWITCH
	POWER MODULE/UPS
	JUMBO MESSENGERS

NOTE:

THE MENTION OF A MANUFACTURER'S PRODUCT BY NAME AND PART NUMBER IS NOT INTENDED TO CLOSE THAT SPECIFICATION, BUT RATHER IT IS INTENDED TO ESTABLISH A MINIMUM LEVEL OF PRODUCT QUALITY AND OPERATION.

## FIRST-IN ALERT SYSTEM LAYOUT PLAN



THIS ROOM CONTAINS:

- MASTER CONTROL UNIT
- CONTROL REMOTE
- POWER MODULE
- RADIO ISOLATION UNIT
- TELEPHONE INTERFACE MODULE
- DATA-LINE SURGE PROTECTOR
- CRASH LINE MODULE

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## APPENDIX K

### FUEL COST INFORMATION



## Fuel Cost Information

The following utility rates for this installation are provided for design

**Electrical:**

Energy Charge - \$0.1041\* per kilowatt-hour

**Natural Gas:**

Commodity Charge Rate\* - \$7.396400 per thousand cubic feet

**Water:**

Commodity Charge Rate - \$4.106100 per thousand gallons

**Sewer:**

Commodity Charge Rate - \$2.815700 per thousand gallons

**Refuse Removal:**

Dumpers - \$114.76 per pick up

Recyclers - \$92.40 per pick up

\*Recalculated Monthly (Refers to average monthly cost per unit)

## APPENDIX L

### LEED Project Credit Guidance

**APPENDIX L****LEED Project Credit Guidance (DEC 10)**

This spreadsheet indicates Army required credits, Army preferred credits, project-specific ranking of individual point preferences, assumptions guidance for individual credits, and references to related language in the RFP for individual credits.

	LEED Credit Paragraph		Army Guidance: Required - Preferred - Avoid	Project Preference Ranking: (1=most preferred, blank=no preference, X=preference not applicable to this credit, Rqd=required)	
		LEED Project Credit Guidance			
PAR		FEATURE			REMARKS
<b><u>SUSTAINABLE SITES</u></b>					
SSPR1		Construction Activity Pollution Prevention (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
SS1		Site Selection		1	See paragraph LEED CREDITS COORDINATION.

SS2	Development Density & Community Connectivity - OPTION 1 DENSITY		X	See paragraph LEED CREDITS COORDINATION.
	Development Density & Community Connectivity - OPTION 2 CONNECTIVITY		X	See paragraph LEED CREDITS COORDINATION.
SS3	Brownfield Redevelopment		X	See paragraph LEED CREDITS COORDINATION.
SS4.1	Alternative Transportation: Public Transportation Access			See paragraph LEED CREDITS COORDINATION.
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	Pref	1	Assume that non-transient building occupants are NOT housed on Post unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 1			Requires provision of vehicles, which cannot be purchased with construction funds. Assume Government will not provide vehicles unless indicated otherwise. Assume that 50% of GOV fleet is NOT alternative fuel vehicles unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 2	Pref		
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 3		X	Requires provision of vehicle refueling stations. Installation must support type of fuel and commit to maintaining/supporting refueling stations.
SS4.4	Alternative Transportation: Parking Capacity	Pref		

SS5.1	Site Development: Protect or Restore Habitat		1	
SS5.2	Site Development: Maximize Open Space	Pref		Assume AGMBC option for aggregated open space at another location on the installation is not available to the project unless indicated otherwise.
SS6.1	Stormwater Design: Quantity Control	Pref	1	See paragraph STORMWATER MANAGEMENT.
SS6.2	Stormwater Design: Quality Control	Pref	1	See paragraph STORMWATER MANAGEMENT.
SS7.1	Heat Island Effect: Non-Roof	Pref	1	
SS7.2	Heat Island Effect: Roof	Pref	1	Coordinate with nearby airfield requirements, which may preclude this credit.
SS8	Light Pollution Reduction	Pref	1	
<b>WATER EFFICIENCY</b>				
WEPR1	Water Use Reduction (Version 3 only)	Rqd	Rqd	All LEED prerequisites are required to be met.
WE1.1	Water Efficient Landscaping: Reduce by 50%	Pref	1	See paragraph IRRIGATION. Project must include landscaping to be eligible for this credit.
WE1.2	Water Efficient Landscaping: No Potable Water Use or No Irrigation	Pref	1	Project must include landscaping to be eligible for this credit.
WE2	Innovative Wastewater Technologies - OPTION 1		1	
WE2	Innovative Wastewater Technologies - OPTION 2			
WE3	Water Use Reduction	Pref	1	See paragraph BUILDING WATER USE REDUCTION.

<b>ENERGY AND ATMOSPHERE</b>				
EAPR1	Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EAPR2	Minimum Energy Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EAPR3	Fundamental Refrigerant Management (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EA1	Optimize Energy Performance	Rqd	Rqd (7pts)	Earning of LEED EA1 points as indicated in paragraph <b>ENERGY CONSERVATION</b> , as a minimum, is required.
EA2.1	On-Site Renewable Energy	Pref		See paragraph <b>ENERGY CONSERVATION</b> .
EA3	Enhanced Commissioning			See paragraph <b>COMMISSIONING</b> . The Commissioning Authority may be provided through the Design-Build Contractor only if in accordance with USGBC Credit Interpretation Ruling (CIR) dated 9/15/06. Commissioning Authority activities begin during design phase and continue well beyond beneficial occupancy. Assume Government will not provide CxA post-occupancy activities unless indicated otherwise.
EA4	Enhanced Refrigerant Management		1	
EA5	Measurement & Verification		1	Assume Government will not provide post-occupancy activities unless indicated otherwise.
EA6	Green Power		X	See paragraph <b>LEED CREDITS COORDINATION</b> .

<b>MATERIALS AND RESOURCES</b>				
MRPR1	Storage & Collection of Recyclables (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Coordinate with Installation during design development on collection service and receptacles.
MR1	Building Reuse			
MR2.1	Construction Waste Management: Divert 50% From Disposal	Pref	1	See paragraph CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT.
MR2.2	Construction Waste Management: Divert 75% From Disposal	Pref		
MR3	Materials Reuse			
MR4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Pref	1	See paragraph RECYCLED CONTENT.
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Pref	1	
MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally			
MR5.2	Regional Materials:20% Extracted, Processed & Manufactured Regionally			

MR6	Rapidly Renewable Materials	Pref		See paragraph BIOBASED AND ENVIRONMENTALLY PREFERABLE MATERIALS and paragraph FEDERAL BIOBASED PRODUCTS PREFERRED PROCUREMENT PROGRAM.
MR7	Certified Wood	Pref		See paragraph BIOBASED AND ENVIRONMENTALLY PREFERABLE MATERIALS.
<b>INDOOR ENVIRONMENTAL QUALITY</b>				
EQPR1	Minimum IAQ Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EQPR2	Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Assume all buildings are smoke free unless indicated otherwise (family housing, barracks and other lodging are facility types where smoking may be permitted in some cases). Except where indicated otherwise, provide an outdoor designated smoking area (with signage but no structure) which will be at least 50 feet from common points of ingress/egress, building air intakes and operable windows. Designated smoking area will not be located in an area that is commonly used by nonsmokers.
EQ1	Outdoor Air Delivery Monitoring			
EQ2	Increased Ventilation			
EQ3.1	Construction IAQ Management Plan: During Construction	Pref	1	See paragraph CONSTRUCTION IAQ MANAGEMENT.
EQ3.2	Construction IAQ Management Plan: Before Occupancy	Pref		See paragraph CONSTRUCTION IAQ MANAGEMENT.



EQ4.1	Low Emitting Materials: Adhesives & Sealants	Pref	1	See paragraph LOW-EMITTING MATERIALS.
EQ4.2	Low Emitting Materials: Paints & Coatings	Pref	1	See paragraph LOW-EMITTING MATERIALS.
EQ4.3	Low Emitting Materials: Carpet/Flooring Systems	Pref	1	See paragraph LOW-EMITTING MATERIALS.
EQ4.4	Low Emitting Materials: Composite Wood & Agrifiber Products	Pref	1	See paragraph LOW-EMITTING MATERIALS.
EQ5	Indoor Chemical & Pollutant Source Control	Pref		System requiring weekly cleaning to earn this credit is not a permitted option unless indicated otherwise.
EQ6.1	Controllability of Systems: Lighting			
EQ6.2	Controllability of Systems: Thermal Comfort			
EQ7.1	Thermal Comfort: Design	Rqd	1	See paragraph HEATING, VENTILATING AND AIR CONDITIONING.
EQ7.2	Thermal Comfort: Verification			Project must earn credit EQ7.1 to be eligible for this credit. Assume Government will not provide post-occupancy activities unless indicated otherwise.
EQ8.1	Daylight & Views: Daylight 75% of Spaces	Pref	1	See paragraph DAYLIGHTING.
EQ8.2	Daylight & Views: Views for 90% of Spaces	Pref		
<b>INNOVATION &amp; DESIGN PROCESS</b>				
IDc1.1	Innovation in Design			See paragraph INNOVATION AND DESIGN CREDITS. Assume Government will not provide any activities associated with ID credits.
IDc1.2	Innovation in Design			
IDc1.3	Innovation in Design			
IDc1.4	Innovation in Design			
IDc2	LEED Accredited Professional	Rqd	Rqd	LEED AP during design

				and construction is required.
<b>REGIONAL PRIORITY CREDITS (Version 3 only)</b>				See paragraph LEED CREDITS COORDINATION.

## APPENDIX M

### OWNER'S PROJECT REQUIREMENTS

22 Jul 10 - APPENDIX M

**FIRESTATIONS**

---

## **Owner's Project Requirements (OPR) Document for LEED Fundamental Commissioning**

**Purpose:** *The general purpose of this document is to provide clear and concise documentation of the Owner's goals, expectations and requirements for commissioned systems, and further this document shall be utilized throughout the project delivery and commissioning process to provide an informed baseline and focus for design development and for validating systems' energy and environmental performance. The Owner's Project Requirements Document is a required document for purposes of LEED - Fundamental Commissioning of the Building Energy Systems. This document is to be used conjunctively with the RFP. However in areas where this APPENDIX M document presents ambiguity or conflicts with regards to the RFP – RFP shall govern and it recommend that the Geographic District provide the statement: "Refer to RFP" as appropriate.*

---

**Project Title/ Project Number:** **Modified Two Company Headquarters Fire  
Station, Fort Polk Joint Readiness Training  
Center**

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**Disclaimer:** *While assistance with APPENDIX M has been provided by the COS – This document shall be reviewed and completed by the Geographic District and approved and coordinated with Base Installation/End User or Proponent as applicable to this project. It is provided as a tool to assist project teams in meeting the documentation requirements for LEED Fundamental Commissioning.*

-Signatures -

**Completed by:**

---

**Geographic Corps District – Project Manager**

---

**Date**

**Approved by:**

---

**Installation/End User/ Proponent**

---

**Date**

---

**General Note to Project Managers:** *The Owner's Project Requirements Document should ideally be completed before the start of design and then furnished to the design team. It must be completed prior to the approval of Contractor submittals of any commissioned equipment or systems to meet LEED requirements. PMs are required to maintain this Owner's Project Requirements Document in the project's LEED documentation file under - Fundamental Commissioning of the Building Energy Systems.*

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22 Jul 10 - APPENDIX M

**FIRESTATIONS****1. Owner and User Requirements and Broad Goals.**

1.1 Briefly describe the primary purpose, and use of this project. Also indicate any broad goals relative to program needs and future expansion (Example: office building with data center needs to flexible enough to accommodate soldiers during deployment and emergency situations)

The primary purpose is a firestation building which is used to promote life safety for the military community.

---

1.2 Briefly describe broad goals relative to quality of materials, construction cost, operational cost and life cycle of equipment.

Please Refer to RFP for necessary requirements for quality of material, construction cost, operational cost and life cycle on equipment.

---

**2. Environmental and Sustainability Goals.**

2.1 Briefly describe the project goals relative to sustainability, environmental issues and energy efficiency. (Example: LEED Silver rating; Meet EPACT)

The project is expected at minimum to meet the requirements for a LEED – Silver Rating. In addition the project must meet all necessary energy requirements for provisions of EPACT, EISA2007 and other applicable Federal Mandates and code requirements.

---

2.2 Briefly describe the project goals relative to building envelope and elements that will impact energy use. (Example: building orientation; facade of the building; fenestration requirements; roofing materials)

Recommend the building and openings be oriented for best day lighting and energy performance. Ensure moisture and water control measures are properly installed. Ensure all project goals are listed in Division -1 of specifications as to identify performance expectations. Ensure glazing and skylight openings are properly flashed and sealed. Ensure insulation R-values meet the minimum requirements. Ensure air leakage controls are implemented; test such as the blow door testing or infrared photos are encouraged in effort to examine joint sealant and other potential leaks.

---

**3. Indoor Environmental Quality Requirements and the Equipment and System Expectations.**

3.1 As applicable to this project briefly describe any accommodations necessary for after hours use and or equipment and system expectations. (Example: access control, lighting controls, daylighting controls, HVAC controls, domestic hot water, energy power)

22 Jul 10 - APPENDIX M

**FIRESTATIONS**

Ensure the lighting fixture type, number, location; desired light level controls and switching are consistent with the construction documents intent. Ensure the thermal controls and functions properly and spaces are comfortable, confirm that the efficiency of HVAC equipment, control functions and sensor locations are consistent with construction documents as well.

---

3.2 Briefly describe the lighting, temperature, humidity, air quality, and ventilation and filtration requirements relative to indoor environmental quality.

Must meet or exceed the provisions of ASHRAE 62 for air quality, ventilation and filtration.

---

**4. Building Occupant and O&M Personnel Requirements.**

4.1 Indicate if the facility be connected to an EMCS. If so, what are the interface requirements? (example: monitoring points, control points, scheduling)

Refer to RFP for all necessary interface requirements.

---

4.2 Briefly describe the desired level of training and orientation for building occupants and O&M staff to understand and use the building systems.

Provide a user manual for occupants who explain at minimum: how energy efficient building system works, how to make minor adjustments and also provide in case of emergency information on who to contact for problems. Also include occupant training on complex systems. After one year of construction should conduct an evaluation which addresses energy use, utility cost, water use and also addresses occupant comments and concerns and financial performance.

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22 Jul 10 - APPENDIX M

**FIRESTATIONS****Table 1: Room Function and Requirements.***Directions: Briefly describe expectations for each of the room spaces in the building.*

<b>Type of Space</b>	<b>Use / Activity</b>	<b>Estimated Number of Occupants</b>
CLASSROOM/ DAY ROOM	Used for instructional purposes; Assembly and large gatherings.	Note: Refer to Modified Standard Design floor plans.
OFFICES	Used for administrative office functions; computer use.	See Note above.
KITCHEN/ BREAK AREAS	Used for purposes of heating and reheating food/ meeting area / dinning area.	See Note above.
DORM ROOMS/ SUITES	Used by on-call personnel for purpose of resting and sleeping.	See Note above.
LOBBY	Used as a sitting waiting area.	See Note above.
APPARATUS BAY	Used to house fire trucks and fire station equipment	See Note above.
CONFERENCE ROOMS	Used for small gatherings and private meetings.	See Note above.
MECH/ELECT/ COMM RM	Used to facilities building service areas.	See Note above.
STORAGE AREA	Used to house either hazardous or non-hazardous supplies, or administrative office equipment.	See Note above.

Expected to meet all criteria and design requirements in both the RFP and Standard design.

**\*\*\*\*\* THIS MARKS THE END OF THIS DOCUMENT.**

APPENDIX N  
REQUIREMENTS FOR MULTIPLE CONTRACTOR COMBINED PROJECTS

**(NOT USED)**



## APPENDIX O

### LEED Strategy Tables

LEED Credit Paragraph	LEED 2.2 Strategy Table	Building Design Substitution Permitted	Sitetework Substitution Permitted	Required Points Strategy	<p>YELLOW ITEMS: Sitework to achieve this credit and provide documentation for each building. GREEN ITEMS: Each building to achieve this credit. BROWN ITEMS: Both the Sitework and each Building to achieve this credit independently and in coordination with one another.</p>

**BUILDING: COMPANY OPERATIONS FACILITIES**

PAR	FEATURE				REMARKS
<b>CATEGORY 1 – SUSTAINABLE SITES</b>					
SSPR1	Construction Activity Pollution Prevention (PREREQUISITE)	NO	NO	R	Contractor is primary permittee.
SS1	Site Selection	NO	NO	1	Combined Bldg/Site credit. Both contractors shall be responsible for maintaining critical construction clearances.
SS2	Development Density & Community Connectivity	NIC	NIC		
SS3	Brownfield Redevelopment	NIC	NIC		
SS4.1	Alternative Transportation: Public Transportation Access	NIC	NIC		
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	NO	NO	1	Combined Bldg/Site credit. Sitework includes bicycle racks.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles	NIC	NO	1	Sitework includes signage that reserves the closest (excluding handicapped spaces) 5% of the total vehicle parking spaces for low-emitting and fuel-efficient vehicles per Option 2.
SS4.4	Alternative Transportation: Parking Capacity	NIC	NO	1	Sitework includes signage that reserves the next closest (excluding handicapped and low-emitting/fuel efficient vehicle spaces) 5% of the total vehicle parking spaces for carpools and vanpools per Option 1.
SS5.1	Site Development: Protect or Restore Habitat	NIC	NIC		
SS5.2	Site Development: Maximize Open Space	NIC	NO	1	Sitework shall include for this area.
SS6.1	Stormwater Design: Quantity Control	NIC	NIC		
SS6.2	Stormwater Design: Quality Control	NIC	NIC		
SS7.1	Heat Island Effect: Non-Roof	NIC	NO	1	Sitework shall provide for this credit.
SS7.2	Heat Island Effect: Roof	NO	NIC	1	Building design shall be responsible for providing.
SS8	Light Pollution Reduction	NO	NO	1	Combined Bldg/Site credit. Building design shall be responsible for building lighting requirements. Sitework shall provide for for site lighting requirements.
<b>CATEGORY 2 – WATER EFFICIENCY</b>					
WE1.1	Water Efficient Landscaping: Reduce by 50%	NO	NIC	1	Building design shall provide as part of their landscaping package.
WE1.2	Water Efficient Landscaping: No Potable Water Use or No Irrigation	NO	NIC	1	Building design shall provide as part of their landscaping package.
WE2	Innovative Wastewater Technologies	YES	YES		Proposed credit must wholly fall within contractor scope or be coordinated with the other contractor.
WE3.1	Water Use Reduction: 20% Reduction	NO	NIC	1	Building design shall provide for this credit.

LEED Credit Paragraph	<b>LEED 2.2 Strategy Table</b>	Building Design Substitution Permitted	Sitework Substitution Permitted	<b>Required Points Strategy</b>	YELLOW ITEMS: Sitework to achieve this credit and provide documentation for each building. GREEN ITEMS: Each building to achieve this credit. BROWN ITEMS: Both the Sitework and each Building to achieve this credit independently and in coordination with one another.
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**BUILDING: COMPANY OPERATIONS FACILITIES**

PAR	FEATURE				REMARKS
WE3.2	Water Use Reduction: 30% Reduction	NO	NIC	1	Building design shall provide for this credit.
<b>CATEGORY 3 – ENERGY AND ATMOSPHERE</b>					
EAPR1	Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	NO	NO	1	Combined Bldg/Site credit.
EAPR2	Minimum Energy Performance (PREREQUISITE)	NO	NIC	R	Building design shall provide for this credit.
EAPR3	Fundamental Refrigerant Management (PREREQUISITE)	NO	NIC	R	Building design shall provide for this credit.
EA1	Optimize Energy Performance	YES	NIC	6	Building design shall include; must comply with EPACT.
EA2	On-Site Renewable Energy	YES	YES		Proposed credit must wholly fall within contractor scope or be coordinated with the other contractor.
EA3	Enhanced Commissioning	NIC	NIC		
EA4	Enhanced Refrigerant Management	YES	NIC	1	Building design shall provide for this credit.
EA5	Measurement & Verification	YES	NIC		Building design shall provide for this credit.
EA6	Green Power	NIC	NIC		

**CATEGORY 4 – MATERIALS AND RESOURCES**

MRPR1	Storage & Collection of Recyclables (PREREQUISITE)	NO	NIC	R	Building design shall provide for this prerequisite.
MR1.1	Building Reuse: Maintain 75% of Existing Walls, Floors & Roof	N/A	N/A		
MR1.2	Building Reuse: Maintain 95% of Existing Walls, Floors & Roof	N/A	N/A		
MR1.3	Building Reuse: Maintain 50% of Interior Non-Structural Elements	N/A	N/A		
MR2.1	Construction Waste Management: Divert 50% From Disposal	NO	NO	1	Combined Bldg/Site credit. Each contractor shall be responsible for diverting the minimum waste from disposal.
MR2.2	Construction Waste Management: Divert 75% From Disposal	NO	NO	1	Combined Bldg/Site credit. Each contractor shall be responsible for diverting the minimum waste from disposal.
MR3.1	Materials Reuse: 5%	NIC	NIC		
MR3.2	Materials Reuse: 10%	NIC	NIC		
MR4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	NO	NO	1	Combined Bldg/Site credit. Each contractor shall be responsible for the minimum recycled content.
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	YES	YES		
MR5.1	Regional Materials: 10% Extracted, Processed & Manufactured Regionally	NO	NO	1	Combined Bldg/Site credit. Each contractor shall be responsible for the minimum regional materials.

LEED Credit Paragraph	<b>LEED 2.2 Strategy Table</b>	Building Design Substitution Permitted	Sitework Substitution Permitted	<b>Required Points Strategy</b>	<p>YELLOW ITEMS: Sitework to achieve this credit and provide documentation for each building. GREEN ITEMS: Each building to achieve this credit. BROWN ITEMS: Both the Sitework and each Building to achieve this credit independently and in coordination with one another.</p>

**BUILDING: COMPANY OPERATIONS FACILITIES**

PAR	FEATURE				REMARKS
MR5.2	Regional Materials:20% Extracted, Processed & Manufactured Regionally	NIC	NIC		
MR6	Rapidly Renewable Materials	YES	NIC		
MR7	Certified Wood	YES	NIC	1	Building design shall provide for this credit.

**CATEGORY 5 – INDOOR ENVIRONMENTAL QUALITY**

EQPR1	Minimum IAQ Performance (PREREQUISITE)	NO	NIC	R	Building design shall provide for this prerequisite.
EQPR2	Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	NO	NIC	R	Smoking is prohibited in non-residential Federal facilities. Building design shall provide for all ETS control features.
EQ1	Outdoor Air Delivery Monitoring	YES	NIC	1	Building design shall provide for this credit.
EQ2	Increased Ventilation	YES	NIC		
EQ3.1	Construction IAQ Management Plan: During Construction	YES	NIC	1	Building design shall provide for this credit.
EQ3.2	Construction IAQ Management Plan: Before Occupancy	YES	NIC	1	Building design shall provide for this credit.
EQ4.1	Low Emitting Materials: Adhesives & Sealants	YES	NIC	1	Building design shall provide for this credit.
EQ4.2	Low Emitting Materials: Paints & Coatings	YES	NIC	1	Building design shall provide for this credit.
EQ4.3	Low Emitting Materials: Carpet Systems	YES	NIC	1	Building design shall provide for this credit.
EQ4.4	Low Emitting Materials: Composite Wood & Agrifiber Products	YES	NIC	1	Building design shall provide for this credit.
EQ5	Indoor Chemical & Pollutant Source Control	YES	NIC	1	Building design shall provide for this credit.
EQ6.1	Controllability of Systems: Lighting	YES	NIC	1	Building design shall provide for this credit.
EQ6.2	Controllability of Systems: Thermal Comfort	YES	NIC		
EQ7.1	Thermal Comfort: Design	YES	NIC		
EQ7.2	Thermal Comfort: Verification	YES	NIC		
EQ8.1	Daylight & Views: Daylight 75% of Spaces	YES	NIC		
EQ8.2	Daylight & Views: Views for 90% of Spaces	YES	NIC		

**CATEGORY 6 – FACILITY DELIVERY PROCESS**

IDc1.1	Innovation in Design	YES	YES		<p>For development of the ID credits, the contractor shall assume the Government will not provide any additional support or post-occupancy activities. ID credits must also be submitted to the Government and approved prior to its use/incorporation.</p>
IDc1.2	Innovation in Design	YES	YES		
IDc1.3	Innovation in Design	YES	YES		

LEED Credit Paragraph	<b>LEED 2.2 Strategy Table</b>	Building Design Substitution Permitted	Sitework Substitution Permitted	<b>Required Points Strategy</b>	<p>YELLOW ITEMS: Sitework to achieve this credit and provide documentation for each building. GREEN ITEMS: Each building to achieve this credit. BROWN ITEMS: Both the Sitework and each Building to achieve this credit independently and in coordination with one another.</p>
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**BUILDING: COMPANY OPERATIONS FACILITIES**

PAR	FEATURE				REMARKS
IDc1.4	Innovation in Design	YES	YES		
IDc2	LEED Accredited Professional	NO	NO	1	Combined Bldg/Site credit. All contractors shall be responsible for having a LEED Accredited Professional on staff, directly involved and responsible for documenting and achieving each credit.
	<b>TOTAL</b>			<b>35</b>	<b>LEED Silver requires a minimum of 33 points.</b>

## APPENDIX P

### LEED Registration of Army Projects

15 April 2010

#### **Number of Registrations**

Each building must be registered separately, except multiple instances of a standard building on a shared site may be registered as a single project. If a single registration for multiple buildings is chosen, all buildings under the single registration must earn exactly the same points. Do not register buildings that are exempt from a specific LEED achievement requirement.

#### **Typical Registration Procedure**

1. Login, complete the online registration form (see guidance below) at the GBCI LEED Online website <http://www.gbci.org/DisplayPage.aspx?CMSPageID=174> and submit it online.
2. Pay the registration fee via credit card (USACE staff: credit card PR&C is funded by project design or S&A funds).
3. GBCI will follow up with a final invoice, the LEED-online passwords and template information.
4. The individual who registers the project online is, by default, the Project Administrator.

#### **Completing the Registration Form**

##### **BEFORE YOU BEGIN:**

**Create a personal account with USGBC if you do not have one.**

**You will need the following information:**

**Project name as it appears in P2 (obtain from USACE Project Manager)**

**Building number/physical address of project**

**Zip code for Installation/project location**

**Anticipated construction start and end dates**

**Total gross area all non-exempt buildings in registration**

**Total construction cost all non-exempt buildings only (see Project Details Section instructions below)**

##### **ACCOUNT/LOGIN INFORMATION**

1. The person registering the project **must have an account with USGBC** (login and password) to complete the form. Go to <http://www.gbci.org/>, click on "register a project" at the drop-down menu for project certification (at the top of the page) and select "register now for LEED 2009" to start the project registration process. If you have an account, login with your email address and password and select "register new project" to proceed. If you do not have an account, you may select "register a new account" and follow the instructions. It is recommended that you create an account separately on the USGBC website before you start the form. IMPORTANT: USACE team members are members of USGBC and are eligible for Member prices. USACE team members registering projects should be sure to include the USACE Corporate Access ID in their personal account profile (if you do not have it contact [richard.l.schneider@usace.army.mil](mailto:richard.l.schneider@usace.army.mil) or [judith.f.milton@usace.army.mil](mailto:judith.f.milton@usace.army.mil) for the number).
2. The Account/Login Information section is filled out by the person registering the project. It may be a Contractor or a USACE staff member.

##### **ELIGIBILITY SECTION**

Follow directions (accepting the terms and conditions)

Review your profile information and make corrections if needed

##### **RATING SYSTEM SELECTION SECTION**

Select single project registration and I know which rating system.

Select the rating system - currently only LEED-NC and LEED for Homes are approved for Army use without special approval.

LEED Minimum Program Requirements: select YES

**RATING SYSTEM RESULTS SECTION**

Confirm selected rating system.

**PROJECT INFORMATION SECTION**

**Project Title:** Begin the project title with a one-word identifier for the Installation. Do not include the word "Fort". After this match the project name used in P2 (contact the USACE Project Manager for this information) and identify the building being registered. Example: "Stewart 4<sup>th</sup> IBC - DFAC".

**Project Address 1 and 2:** This is the physical location of the project. Provide building number, street address, block number or whatever is known to best describe the location of the project on the Installation.

**Project City:** Installation Name

**State, Country, Zip Code:** Self-explanatory

**Anticipated Construction Start and End Dates:** Self-explanatory – give your best guess if unknown. Note that required data entry format is: 1 or 2 digit month/1 or 2 digit date/4 digit year (example 3/23/2010)

**Gross Square Footage:** Provide total area all buildings in LEED project. Exclude the area of any buildings that are exempt from the LEED achievement requirement (for example, exclude an unconditioned storage shed to be constructed with a barracks complex).

**Is Project Confidential:** Indicate NO except, if project has security sensitivity (elements that are FOUO or higher security), indicate YES.

**Notification of Local Chapter:** Indicate NO unless Government/USACE Project Manager requests you to indicate YES.

**Anticipated Project Type:** Select the most appropriate option from the drop-down menu.

**Anticipated Certification Level:** Select the applicable option from the drop-down menu (Silver is the usual level).

**PROJECT OWNER INFORMATION SECTION**

**Project Owner First Name, Last Name, email, phone, address:** The Project Owner is the USACE Project Manager. Obtain this info from the USACE Project Manager.

**Organization:** U.S. Army Corps of Engineers. This field MUST be completed this way because it will be used as a search field by higher HQ to find all USACE registered projects. You may supplement it with district name at the end but DO NOT revise or use an acronym.

**May we publish Owner information:** Indicate NO

**Owner Type:** Pick Federal Government from drop-down menu.

**Project Owner Assertion:** Check the box

**PAYMENT INFORMATION**

Self-explanatory

**APPENDIX Q**  
**REV 2.1 – 30 SEP 2010**  
**AREA COMPUTATIONS**

**Computation of Areas:** Compute the “gross area” and “net area” of facilities (excluding family housing) in accordance with the following subparagraphs:

**(1) Enclosed Spaces:** The “gross area” is the sum of all floor spaces with an average clear height  $\geq 6'-11"$  (as measured to the underside of the structural system) and having perimeter walls which are  $\geq 4'-11"$ . The area is calculated by measuring to the exterior dimensions of surfaces and walls.

**(2) Half-Scope Spaces:** Areas of the following spaces shall count as one-half scope when calculating “gross area”:

- Balconies
- Porches
- Covered exterior loading platforms or facilities
- **Covered but not enclosed spaces, canopies, training, and assembly areas**
- Covered but not enclosed passageways and walks
- Open stairways (both covered and uncovered)
- Covered ramps
- Interior corridors (Unaccompanied Enlisted Personnel Housing Only)

**(3) Excluded Spaces:** The following spaces shall be excluded from the “gross area” calculation:

- Crawl spaces
- Uncovered exterior loading platforms or facilities
- Exterior insulation applied to existing buildings
- Open courtyards
- Open paved terraces
- Uncovered ramps
- Uncovered stoops
- Utility tunnels and raceways
- Roof overhangs and soffits measuring less than 3'-0" from the exterior face of the building to the fascia

**(4) Net Floor Area:** Where required, “net area” is calculated by measuring the inside clear dimensions from the finish surfaces of walls. If required, overall “assignable net area” is determined by subtracting the following spaces from the “gross area”:

- Basements not suited as office, special mechanical, or storage space
- Elevator shafts and machinery space
- Exterior walls
- Interior partitions
- Mechanical equipment and water supply equipment space
- Permanent corridors and hallways
- Stairs and stair towers
- Janitor closets
- Electrical equipment space
- Electronic/communications equipment space



## APPENDIX R

### Preliminary Submittal Register

#### NOTE TO SPECIFIER:

1. Appendix R" will be a Adobe Acrobat pdf version of the Specifier completed "Sample Preliminary Submittal Register." The Sample Register is Excel Spreadsheet format of the RMS Input Form 4288A, which serves two purposes.
2. First, The Register allows the both Government and the Proposers to see and estimate the cost of the Division 00 and Division 01 submittals required by the contract in addition to the Contractor generated submittal register items developed during Design After Award.
3. Secondly, after award, the Government will provide the Contractor the actual Excel Spreadsheet for the Contractor to input the data into RMS to create the Submittal Register used during contract performance. See Section 01 33 00 (Submittal Procedures), paragraph 1.8 (Submittal Register) for the contract requirements.
4. For the contract or task order Solicitation, the Specifier must complete APPENDIX R, found at the following link:  
<http://mrsi.usace.army.mil/rfp/Shared%20Documents/Sample%20Preliminary%20Submittal%20Register.xls> , save it as a PDF file and then upload it into the Wizard as Appendix R.
5. The RMS Input Form initially includes submittals required by the standardized Model RFP Division 00 and Division 01 Sections, except Section 01 10 00, paragraph 3. Examine the Special Contract Requirements, paragraphs 3 and 6 and any other locally developed portions of the RFP for required submittals and add them to the Input Form. Do not duplicate submittals already listed in the standardized RMS Input Form, because the Contractor needs to submit this information only once.
6. After award, the Government provides the Excel spreadsheet to the selected contractor to develop and input the RMS Input form for the submittal register required by paragraph 1.8 of Section 01 33 00, Submittals.

## Appendix S

REV 1.1 JUL 2011.

### **Manufacturing Performance Requirements for Plumbing Fixtures From The Energy Policy Act of 1992 (PL 102-486) (Including Exceptions for Projects Registered for LEED 3.0 or higher)**

**Note:** This information is for use in establishing the Baseline to calculate flow rate reductions from said Baseline, where required by the contract.

#### **Subtitle C--Appliance and Equipment Energy Efficiency Standards**

#### **SEC. 123. ENERGY CONSERVATION REQUIREMENTS FOR CERTAIN LAMPS AND PLUMBING PRODUCTS.**

... (j) **STANDARDS FOR SHOWERHEADS AND FAUCETS-** (1) The maximum water use allowed for any showerhead manufactured after January 1, 1994, is 2.5 gallons per minute when measured at a flowing water pressure of 80 pounds per square inch. Any such showerhead shall also meet the requirements of ASME/ANSI A112.18.1M-1989, 7.4.3(a).

`(2) The maximum water use allowed for any of the following faucets manufactured after January 1, 1994, when measured at a flowing water pressure of 80 pounds per square inch, is as follows:

`Lavatory faucets: 2.5 gallons per minute **(BUT SEE BELOW\*\*)**

`Lavatory replacement aerators: 2.5 gallons per minute

`Kitchen faucets : 2.5 gallons per minute

`Kitchen replacement aerators: 2.5 gallons per minute

`Metering faucets: 0.25 gallons per cycle

`(k) **STANDARDS FOR WATER CLOSETS AND URINALS-** (1)(A) Except as provided in subparagraph (B), the maximum water use allowed in gallons per flush for any of the following water closets manufactured after January 1, 1994, is the following:

`Gravity tank-type toilets --1.6 gpf.

`Flushometer tank toilets --1.6 gpf.

`Electromechanical hydraulic toilets --1.6 gpf.

`Blowout toilets --3.5 gpf.

`(B) The maximum water use allowed for any gravity tank-type white 2-piece toilet which bears an adhesive label conspicuous upon installation consisting of the words `Commercial Use Only' manufactured after January 1, 1994, and before January 1, 1997, is 3.5 gallons per flush.

`(C) The maximum water use allowed for flushometer valve toilets, other than blowout toilets, manufactured after January 1, 1997, is 1.6 gallons per flush.

`(2) The maximum water use allowed for any urinal manufactured after January 1, 1994, is 1.0 gallon per flush.

**\*\* EXCEPTIONS for Projects Registered under LEED 3.0 or higher.**

1. Any exceptions identified in the applicable LEED criteria.
2. Public lavatory faucets shall deliver a maximum flow rate of 0.5 gallons per minute, when tested in accordance with ASME A 112.18/CSA B125. Use that flow rate as the Baseline figure for calculating any required reductions from the Baseline.

## APPENDIX T

### FUNCTIONAL AREA LIGHTING CONTROL STRATEGY (FALCS)

#### A. GENERAL LIGHTING CONTROL SYSTEM ENERGY MANAGEMENT STRATEGIES

**SUMMARY:** This appendix describes various lighting energy management strategies to utilize across functional areas. These strategies are intended to supplement and NOT supersede the requirements of ASHRAE 90.1.

1. Consider **LIGHT LEVEL TUNING** to maintain the appropriate light level for a given space. Initial light levels are set high to compensate for light depreciation over time. Where dimming ballasts or dimmable LED drivers are used, they shall be digital and addressable in nature (where available) that can provide individual fixture light level tuning and reconfigurability that dims the light level to the target level, saving the energy that otherwise would be used to compensate for future light depreciation. Provide a life-cycle cost-benefit analysis (LCCBA) of light level tuning for all spaces where the general lighting luminaires are equipped with digital addressable dimming ballasts or LED drivers. The LCCBA shall follow the methodology contained in the IESNA Lighting Handbook. Provide light level tuning where the LCCBA shows it to be economical.
2. Use **OCCUPANCY/VACANCY SENSORS** to automatically turn off lighting a specified time after all occupants leave the space. The off time shall be adjustable settable to 1, 5, 15, or 30 minutes. Select the type (single or dual technology, wired or wireless) based on the use and configuration of the space. Lighting control system shall have the capability to manage both hard-wired and wireless sensors where applicable. Single technology solutions shall incorporate signal processing technology that distinguishes between background noise and actual motion without automatically changing their sensitivity threshold. To maximize energy savings potential, all occupancy sensors shall be either **MANUAL ON – AUTOMATIC OFF** (vacancy sensor) or **AUTOMATIC ON** (to a specified light level of 50% or less) – **AUTOMATIC OFF** to maximize energy savings. Occupancy/Vacancy sensors properly located in the space and set appropriately can offer typical lighting energy savings of 15% or more.
3. Use **DAYLIGHT HARVESTING** to control lighting in areas within at least two window head heights (head height is the distance from the floor to the top of the glazing) adjacent to exterior view windows. Typical daylight penetrates three times the window head height into the space. To maximize energy savings, daylight dimming strategies need to penetrate beyond the first row of luminaires (first daylight zone). When daylighting installed fluorescent or LED luminaires, accomplish daylight harvesting by digitally addressable dimming ballasts or drivers. As the natural light in the space increases, the artificial light level should dim gradually to maintain a uniform light level and prevent disruption to the occupants. One daylight sensor must be able to control multiple daylighting zones (cross-zoning) without the need of adding more sensors. All controls (daylight sensors, occupancy sensors, wall stations) shall have the capability to connect to the system via hard wire or wireless. Apply the same daylighting strategies to areas where skylights are available (refer to ASHRAE 189.1 daylight zone definitions). Daylighting systems properly tuned and calibrated can offer typical lighting energy savings of 15% or more.
4. Consider **AUTOMATED SHADING** in spaces utilizing daylight harvesting to maximize the energy savings of the day lighting system. The shades shall be controlled to reduce glare and unwanted heat gain while still allowing natural light to enter the space. When utilizing automated shading consider the following :
  - A. For ease of use and space aesthetics, operate the automated shades by common controls, wired or wireless (i.e. same appearance and design) with the lighting control system.
  - B. For maximum energy savings the automated shading system shall predictably position the shades based on a combination of time of day, façade direction, and sky conditions.
  - C. For maximum design flexibility and ease of installation, shade system should have the capability to address and control each shade individually.
  - D. The shading system shall have a manual override that allows the occupant to temporarily adjust the shades to any desired position. The system will revert back to automatic control after a specified period of time.

Provide a life-cycle cost-benefit analysis (LCCBA) of automated shading for all spaces where daylight harvesting is provided. The LCCBA shall follow the methodology contained in the IESNA Lighting Handbook. Provide automated shading where the LCCBA shows it to be economical.

5. Use SCENE BASED DIMMING in multiple-use areas including auditoriums, conference rooms and classrooms. Also provide scene based dimming in dining rooms and gymnasiums with multiple functions. One button preset touch recall shall allow multiple zones of light within a space to go to the appropriate light levels, known as a scene, for a specific task or use. Scene based control shall allow the integration of AV controls, shading/projection screens and lighting to work seamlessly with one button preset touch (i.e. lights dim, projection screen lowers, and shades go down). If dimming ballasts or LED drivers are used, they shall also be digital and addressable in nature (where available) to take advantage of installation and life-cycle reconfiguration benefits.
6. Provide PERSONAL CONTROL of lighting in spaces to allow the user of the space to vary the general light level based on the task at hand. Personal control can be achieved by wall mounted controls (hard wired or wireless), Infrared or Radio Frequency (RF) wireless devices, or via computer. Digital addressable ballasts and LED drivers allow the control flexibility of personal dimming of installed lighting on the occupant's work area (i.e. dim the luminaire over their cubicle to the appropriate light level).
7. Consider WIRELESS lighting control options for all installations, including retrofit projects (easy installation, lower installed cost, no power packs necessary). Wireless products shall include but not be limited to occupancy / vacancy sensors, daylight sensors, local wall controls, plug in switching and dimming appliance and parasitic load modules. To avoid interference, wireless products should communicate in an FCC frequency band that does not allow continuous transmissions and is free of Wi-Fi devices.

## **B. FUNCTIONAL TESTING AND MANUFACTURER SUPPORT**

SUMMARY: This section describes functional testing to be performed on the lighting control system and the support required from the lighting control manufacturer.

1. Hire an independent agent with no less than three years experience in testing of complex lighting control systems to conduct and certify functional testing of lighting control devices and control systems. The testing agent shall not be directly involved in either the design or construction of the project and shall certify the installed lighting controls meet or exceed all requirements of ASHRAE 90.1 and all documented performance criteria. The lighting control manufacturer's authorized technical representative may serve as the testing agent. Submit qualifications of the testing agent for approval. Submit copies of test results to the Government.
2. LIGHTING CONTROL MANUFACTURER SUPPORT shall include technical phone support located in the United States. The technical phone support shall be available 24 hours a day, 365 days a year.

## APPENDIX AA

### Pretreatment of Termites on Fort Polk

## Pretreatment of Termites on Fort Polk

### Pier Foundations

The termiticide of choice for pier foundations is Termador. Use of any other product must be approved by the Installation Pest Management Office.

The footings of each pier will be treated at label rate prior to the pier being installed. Additionally, the soil around the pier will be treated at label rate once back fill dirt is added and prior to completion of project.

### Slab Foundations

The termiticide of choice for pier foundations is Termador. Use of any other product must be approved by the Installation Pest Management Office.

All footings will be treated at label rate prior to the footing being poured. The ground will be treated at label rate prior to rebar or plastic being installed. Additionally, the back fill soil will be treated at label rate, after back fill is complete and prior to completion of project.

### Additional Requirements

1. The Pest Control company performing the treatment must have a Louisiana Commercial Applicators License.
2. The Pest Control company is required to provide the Pest Management Office a photo ID and a copy of the Applicator's license.
3. All termiticides will be mixed onsite.
4. The Pest Control company will provide Pest Management with the following upon completion of each treatment.
  - a. Name of Termiticide
  - b. Lot Number of product
  - c. Total gallons applied
  - d. Total Pounds of Active Ingredients applied

## APPENDIX BB

### Contractor Environmental Information



Section: Appendix BB  
**ENVIRONMENTAL COMPLIANCE  
OFFICERS (ECOs)**

Contractors with work exceeding 6 months are required to appoint a primary and alternate ECO and ensure that ECOs complete the installation ECO Course prior to starting work

Call 531-5067 to schedule ECO Course dates  
Fort Polk assigns an Environmental Customer Service Technician (ECST) to all Contractors. ECSTs provide ECOs with day-to-day technical support, guidance, and compliance verification on environmental requirements

Call 531-6008 for ECST support

**RECORD OF ENVIRONMENTAL  
CONSIDERATION (REC)**

Review environmental concerns detailed in the completed REC with your COR prior to commencement of work. Call 531-7417 with any questions regarding the REC

**AIR QUALITY**

Burning is prohibited without approval  
Prevent visible emissions of dust and smoke  
Work involving Ozone Depleting Chemicals (ODCs) must be performed by certified technicians  
Minimize the use of ODCs and document the quantity and location of use  
Minimize air emissions and report any modifications to air emission sources

**PEST MANAGEMENT**

Use only pesticides, herbicides or fungicides specified in the contract  
Obtain approval by the installation prior to application  
Report all materials used to the Environmental Office (531-6373)

**WATER QUALITY**

Contact American Water for water/wastewater utility operations at 537-1161 or 531-2036:  
Before the initiation of work on the systems  
For access to drinking water system (fire hydrants, filling water tank trucks, etc.) and wastewater collection systems  
Verify with the COR that the State has approved the project prior to starting work

**HAZARDOUS WASTE (HW)**

Manifest and package all HW prior to leaving the installation. All manifests must be signed by the Environmental Office

Determine if waste is a HW using lab analysis or process knowledge

Remove all HW to an approved off-post disposal facility

Use the installation's hazardous waste EPA ID number for waste disposal unless otherwise stated in the contract specifications

Storage of HW-Satellite Accumulation Point

- \*At or near the point of generation
- \*Mark containers "Hazardous Waste"
- \*Inspect weekly per JRTC & FP 200-1
- \*Keep all containers closed
- \*Store all containers in secondary containment
- \*Do not store more than 55-gal of HW
- \*Remove all containers within 72 hrs of filling

Contact the Environmental Office if you will exceed the time or quantity restrictions

**HAZARDOUS MATERIALS (HM)**

Provide a copy of a HM inventory upon establishment of worksite

Completely empty HM containers and properly dispose

Do not rinse any containers or items used to apply HM into any storm drain or surface water

Do not mix HM unless required

Store all HM in secondary containment

Maintain spill kits in HM storage area

Ensure proper MSDSs are available on site for all HM used and stored

Ensure caps & lids are in place on all containers when not in use

**SOLID WASTE**

Remove all solid waste from the installation to an approved off-post disposal facility

Report quantities of waste removed and recycled to the Environmental Office in Bldg 2516 or fax to 531-8950

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**STORMWATER** Page 531 of 1082

If one or more acres of land will be disturbed, contact the COR for guidance for obtaining a State storm water permit

Wash down of paved areas is prohibited

Do not store objects containing any HM or POL in an area subject to run off

Do not dispose or discharge any type of pollutants into a storm drain or surface water

**ASBESTOS & LEAD-BASED PAINT**

Assume that materials on Fort Polk contain asbestos and/or lead based paint (LBP) unless otherwise documented

Notify the State of asbestos & LBP removal

Notification forms (AAC-2 and LPN) are to be reviewed by the Environmental Office prior to submission to the State. Allow enough time for a review by the Environmental Office and notification to the State, 10 working days prior to the project start date

Any removal of ACM shall be performed by a State licensed abatement contractor

Air monitoring is required for all abatements

At completion of abatement, a government representative must review air clearance data and visually inspect abatement site prior to containment removal

A government representative must sign all waste manifests

Use of ACM and ACM-containing products is prohibited. Use of paint with a lead content higher than 0.06% by weight is prohibited

When installing thermal system insulation, designate "Non ACM" or "Asbestos Free" on the insulation using specifications currently required by the installation. Contact DPW-Engineering at 531-7380 for the specifications

**SENSITIVE AREAS**

Areas are marked with orange stakes

Cultural Resources Sites: do not deface in any way an archaeological resource

Endangered Species Habitats: Do not disturb, endanger, or damage to any degree the Red-Cockaded Woodpecker (RCW) habitat or cavity tree. Call 531-6088 for further information

Wetlands: Do not damage any wetlands

Friday, September 07, 2012

All Contractors that transport, process, store, or in any way manage a HW, HM, POL, or other restricted item are required to develop and post at the worksite a written Spill Response SOP. Call 531-6008 for a copy of the SOP template

In case of a spill:

**Immediately contact the Fire Department for assistance at 531-2026 or 911.**

Take appropriate action to protect workers and bystanders

Contain the spill (if it can be done safely)

Secure the spill site

Restrict ignition sources

\*Failure to report a hazardous substance or POL spill is a federal offense

**QUICK REFERENCE INFORMATION**

Review REC prior to starting work

All waste must be disposed off the installation unless otherwise approved

Store all HM/HW in secondary containment protected from the elements

All manifests must be signed by the Environmental Office

Maintain copies of MSDSs for all HM onsite

Perform laboratory analysis or use process knowledge to determine if a waste is HW prior to disposal

Keep a spill kit near any HM storage area

Burning is prohibited without approval

Minimize all air emissions

Do not rinse any containers or items into storm drains or surface water

**Information Submitted to the Environmental Office as Applicable:**

- \* Quantity of waste disposed and recycled
- \* Pesticides/Herbicides/Fungicides used
- \* Hazardous Material Inventories
- \* Air Emission Inventories; quantity and location of ODCs used
- \* Storm Water Pollution Prevention Plans; Notice of Intent and Notice of Termination
- \* Asbestos AAC-2 and Lead LPN notification forms

**PAINT**

Containerize all wastes generated from washing activities with non-latex paint

Remove all containerized material from the installation for proper disposal – determine whether the waste is a hazardous waste prior to removal

Completely use any materials prior to disposal of containers

Items used to apply latex paint can be cleaned in sinks with water only

No containers or items used to apply paint can be washed onto the ground, storm drains, or surface water

Any waste paint or thinners must be properly manifested prior to leaving the installation if determined to be HW

**POL PRODUCTS**

Secondary containment is required for any containers ≥55 gallons

Contaminated gasoline and materials used to clean up gasoline spills are handled as HW

**SOLVENTS**

Keep lids closed when not in use

Collect any spent solvent and determine whether it is HW prior to disposal

Do not discharge any solvents – containerize all waste materials

**REPORT TO ENVIRONMENTAL OFFICE**

Spills of hazardous materials or waste after immediately notifying the Fire Department

The arrival on site of any Federal, State, DoD, and DA environmental regulators or enforcement agents

The receipt of any related correspondence from an environmental regulator or enforcement agent

Any non-compliance or non-conformance with applicable Federal and State environmental laws, DoD, DA and installation environmental regulations, EMS and/or policies

**GREEN PROCUREMENT PROGRAM**

Minimize the purchase and use of hazardous materials; purchase items containing recovered materials; purchase items with biobased content; purchase energy efficient products; reduce the purchase /use of ODCs

## APPENDIX CC

### Electrical Metering

# SHARK<sup>®</sup>200

## UPGRADABLE FULLY FEATURED POWER & ENERGY METER

Revenue Grade with Advanced I/O and Power Quality

**RECORD POWER QUALITY EVENTS**

**EXTENSIVE DATA-LOGGING**

Shark<sup>®</sup> 200T  
Transducer Only

Shark<sup>®</sup> 200  
Meter/Transducer

www.electroind.com



### From Simple to Sophisticated

- Simple Multifunction Meter: V-Switch<sup>™</sup> 1
- Historical Data-logging: V-Switch<sup>™</sup> 2
- Advanced Power Quality Waveform Recorder: V-Switch<sup>™</sup> 5 or 6

### Industry Leading Performance

- Highly Accurate Metering Technology
- Expandable I/O with 100BaseT Ethernet
- V-Switch<sup>™</sup> Technology Upgrade
- Extensive Data Logging
- Power Quality Recording
- Up to 512 Samples/Cycle

**Electro Industries/GaugeTech**  
The Leader in Web Accessed Power Monitoring  
1800 Shames Drive Westbury, NY 11590  
1-877-EIMETER | 516-334-0870 | www.electroind.com

Friday, September 07, 2012



## HIGH PERFORMANCE WAVEFORM RECORDING

### Basic Features Summary

- 0.2% Class Revenue Certifiable Energy and Demand Metering
- Meets ANSI C12.20 and IEC 687 (0.2% Class)
- Multifunction Measurement
- 3 Line .56" Inch LED display
- % of Load Bar for Analog Perception
- Standard RS485 (Modbus and DNP 3.0)
- IrDA Port for PDA Read
- Ultra-Compact
- Fits both ANSI and DIN Cutouts

### Advanced Features Summary

- High Performance Waveform Recorder
- Up to 4 Megabytes Flash for Historical Data Logging & PQ Recording
- Extremely Configurable Field Upgradable I/O
- 100BaseT Ethernet
- V-Switch™ Technology



### APPLICATIONS

- Utility Metering
- Substations
- Power Generation
- Submetering
- Power Quality Studies
- Load Studies
- Commercial Metering
- Industrial Metering
- Campus Metering
- Analog Meter Replacement
- Disturbance Recording
- Voltage Recording

## ACCURACY AND UPGRADE SWITCHES

Electro Industries introduces a new standard in panel mounted power metering. The Shark® 200 metering system is an ultra- compact power metering device providing industry leading revenue metering functionality combined with advanced data-logging, power quality, communication and I/O traditionally found only in high performance and high cost systems. This product is designed to incorporate advanced features in a cost effective small package for large scale, low cost deployment within an electrical distribution system.

### V-Switch™ Technology

The Shark® 200 meter is equipped with EIG's exclusive V-Switch™ technology. This technology allows users to upgrade and add features by using communication commands as needed, even after the meter is installed.

### V-Switches Include the Following Features:

Feature	V1	V2	V3	V4	V5	V6
Multifunction Measurement with I/O Expansion	✓	✓	✓	✓	✓	✓
2 Megabytes Data-Logging		✓	✓	✓		
3 Megabytes Data-Logging					✓	
4 Megabytes Data-Logging						✓
Harmonic Analysis			✓	✓	✓	✓
Limit and Control Functions				✓	✓	✓
64 Sample per Cycle Waveform Recorder					✓	
512 Sample per Cycle Waveform Recorder						✓

### ACCURACY

Measured Parameters	Accuracy %	Display Range
Voltage L-N	0.1%	0-9999 Scalable V or kV
Voltage L-L	0.2%	0-9999 V or kV Scalable
Current	0.1%	0-9999 Amps or kAmps
+/- Watts	0.2%	0-9999 Watts, kWatts, MWatts
+/-Wh	0.2%	5 to 8 Digits Programmable
+/-VARs	0.2%	0-9999 VARs, kVARs, MVARs
+/-VARh	0.2%	5 to 8 Digits Programmable
VA	0.2%	0-9999 VA, kVA, MVA
VAh	0.2%	5 to 8 Digits Programmable
PF	0.2%	+/- 0.5 to 1.0
Frequency	+/- 0.03 Hz	45 to 65 Hz
%THD	+/- 2.0%	1 to 99.99%
% Load Bar	+/- 1 Segment	(0.005 to 6) A

Note: Applies to 3 element WYE and 2 element Delta connections. See full accuracy specifications in Shark® 200 Meter User Manual. Neutral current 2% accuracy.

### Tracable Watt-Hour Test Pulse for Accuracy Verification

The Shark® 200 is a traceable revenue meter. It contains a utility grade test pulse allowing power providers to verify and confirm that the meter is performing to its rated accuracy. This is an essential feature required of all billing grade meters.

- Utility Block and Rolling Average Demand
- Historical Load Profiling

**EXTENSIVE DATA-LOGGING CAPABILITY (V2 and Higher)**

The **Shark®200 meter** offers the capability of having 2 Megabytes of data-logging to be used for historical trends, limit alarms, I/O changes and sequence of events. The unit has a real-time clock that allows for time stamping of all the data in the instrument when log events are created.

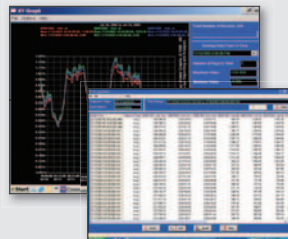
**Historical Logs**

- 3 Assignable Historical Logs
- Independently Program Trending Profiles
- Up to 64 Parameters per Log

**System Events Log**

To protect critical billing information, the meter records and logs the following with a time stamp:

- Demand Resets
- Password Requests
- System Startup
- Energy Resets
- Log Resets
- Log Reads
- Programmable Settings Changes

**Historical Trending****I/O Change Log**

- Provides a Time Stamped Log of any Relay Output
- Provides Time Stamped Log of Input Status Changes
- 2048 Events Available

**Limit/Alarm Log**

- Provides Magnitude and Duration of an Event
- Includes Time Stamps and Alarm Value
- 2048 Events Available

**Alarm Log****Limits Alarms and Control Capability (V4 Option)****Limit Events**

- Any measured parameter
- Up to 16 Limits
- Voltage Imbalance
- Current Imbalance
- Based on % of full scale settings

**Limit Set Up****HIGH PERFORMANCE POWER QUALITY ANALYSIS (V5 AND V6)****Simultaneous Voltage and Current Waveform Recorder**

The unit records up to 512 samples per cycle for a voltage sag or swell or a current fault event. The unit provides the following pre-event and post-event recording capability. Waveform records are programmable to the desired sampling rate. V5 provides up to 3 Megabytes storage and V6 provides a total of 4 Megabytes.

The meter's advanced DSP design allows Power Quality triggers to be based on a 1 cycle updated RMS. Up to 170 events can be stored until the memory fills. The meter stores waveform data in a first-in/first-out circular buffer to insure data is always recording.

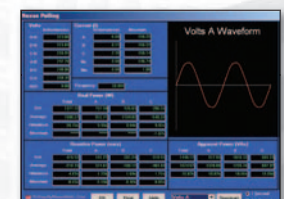
**Optional Waveform Recorder**

	Samples per Cycle	Pre Event Cycles	Post Event Cycles	Max Waveform per Event	Number of Stored
<b>V5</b>	16	32	96	256	85
	32	16	48	128	85
	64	8	24	64	85
<b>V6</b>	128	4	12	32	170
	256	2	6	16	170
	512	1	3	8	170

**Note:** Sampling rate based on 60Hz. 50Hz systems, divide sample rate by 0.83.

**Waveform Scope**

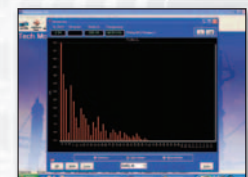
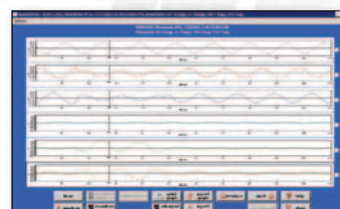
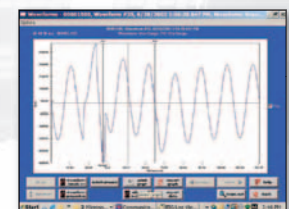
The unit uniquely offers a waveform scope to view the real time waveform for voltage and current. Waveform scope allows the meter to be used as a basic oscilloscope throughout a power system.

**Waveform Scope Display****Independent CBEMA Log Plotting**

The meter stores an independent CBEMA log for magnitude and duration of voltage events. This allows a user to quickly view total surges, total sags and duration without retrieving waveform data.

**Harmonic Recording to the 40th Order**

The Shark® 200 meter provides advanced harmonic analysis to the 40th order for each voltage and current channel in real time. Using the stored waveforms, harmonic analysis is available to the 255th order. The harmonics algorithm uses sophisticated active anti-aliasing filtering to provide true and accurate harmonics even when higher level harmonic conditions are present.

**Harmonic Spectrum (40th Order)****6 Channels of Waveforms****Waveform Zoomed**



## STANDARD COMMUNICATION CAPABILITY

The Shark® 200 meter provides two independent communication ports with advanced features.

### Rear Mounted Serial Port with KYZ Pulse

- RS485 - This port allows RS485 communication using Modbus or DNP3.0 Protocols. Baud rates are from 9600 to 57.6k.
- KYZ Pulse - In addition to the RS485, the meter also includes Pulse Outputs mapped to absolute energy.

### Front Mounted IrDA Communication

Uniquely, the Shark® meter also has an optical IrDA port, allowing the unit to be set up and programmed using a PDA or remote laptop without need for a communication cable. Just point at the meter with an IrDA-equipped PC or PDA and configure it. COPILOT EXT is a Windows CE software package that allows you configure the meter and poll readings.

## FIELD EXPANDABLE I/O AND COMMUNICATION CAPABILITIES

**The Shark® 200 meter offers unequalled I/O expandability.** Using the two universal option slots, the unit can easily be configured to accept new I/O cards even after installation. The unit auto-detects installed I/O option cards. Up to 2 cards of any type can be used per meter.

### 1. INP100S: 100BaseT Ethernet Capability –

The meter can provide 100BaseT Ethernet functionality. This advanced card is equipped with EIG's exclusive Total Web Solutions.

- WEBMOD - 12 Socket Modbus TCP
- WEBEXPLORER - Built-in web pages



### 2. 1mAOS: Four Channel Bi-directional 0-1mA Outputs

- Assignable to any parameter
- 0.1% of full scale
- 0 to 10K Ohms, no accuracy losses
- Range +/- 1.20mA



### 3. 20mAOS: Four Channel 4-20mA Outputs

- Assignable to any parameter
- 0.1% of full scale
- 0 – 500 Ohms, no accuracy losses
- Loop Powered using up to 24 Volts DC



### 4. RO1S: Two Relay Outputs / Two Status Inputs

- 250VAC/30VDC - 5A Relays, Form C
- Trigger on user set alarms
- Set delays and reset delays
- Status Inputs – Wet / Dry Auto Detect (Up to 150 VDC)
- Must be used with V4 or higher V-Switch™ option for limit based alarms and control



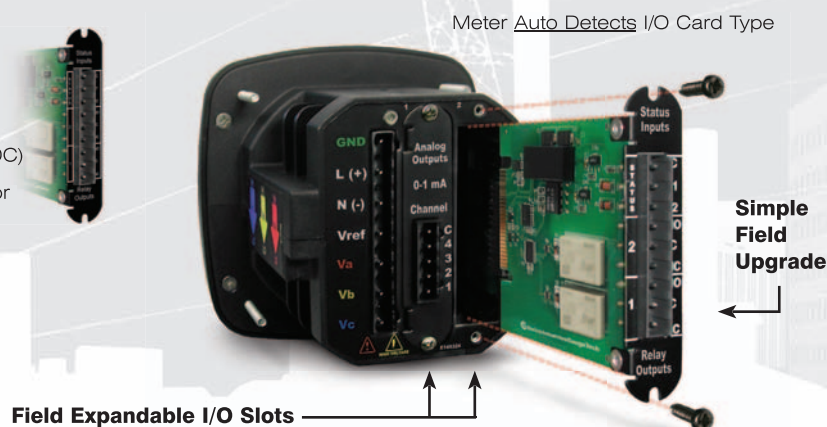
### 5. PO1S: Four Pulse Outputs / Four Status Inputs

- Programmable to any energy parameter and pulse value
- Form A: Normally open contacts
- Also used for End of Interval pulse
- Can function for manual relay control and limit based control (V4-V6 Options)
- 120mA continuous load current
- Status Inputs – Wet/Dry Auto Detect (Up to 150 VDC)



### 6. FOVPS or FOSTS: Fiber Optic Card

- EIG's exclusive Fiber Optic Daisy Chain switchable built in logic mimics RS485 half duplex bus allowing you to daisy chain meters for lower installation cost. Full duplex is also assignable.
- ST Terminated Option (-FOST)
- Versatile Link Terminated Option (-FOVP)
- Modbus and DNP 3.0 protocols available



**Note:** I/O cards can be ordered separately - see last page.

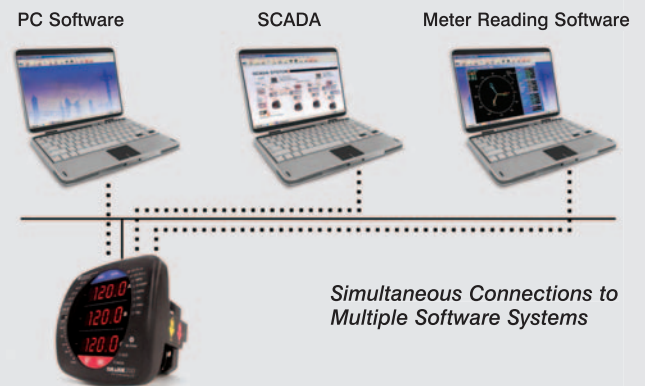
**100 BASE T ETHERNET WITH TOTAL WEB SOLUTIONS ETHERNET (INP 100S)****Total Web Solutions—Advanced Metering Data Integration with the Web**

Total Web Solutions is an advanced Ethernet Communication Architecture that allows you to view metering data and host your meter power information web site directly on a Shark® meter. The meter directly hosts the web data without any need for dedicated server software, Active X Controls or Java Applets. The meter does the data collection, the formatting and the page hosting. Additionally, this solution is very Information Technology Dept. friendly because it causes almost no network traffic and provides all formatted data through an HTTP interface without using resident client software.

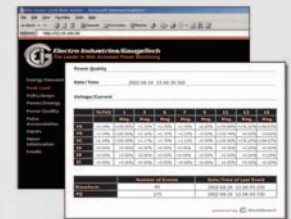
**Advanced Features Include:**

- 100BaseT Ethernet
- Direct Web Page Hosting With Live Readings
- Read Direct From Meters (No Server Software Needed)
- No Active Controls or Java Downloads
- Simultaneous 12 socket connection
- Modbus TCP
- Low Cost / High Functionality

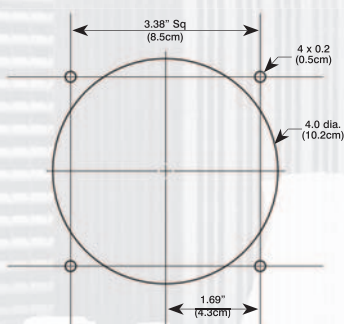
**WEB MOD** is a 10/100BaseT design that allows the unit to speak with 12 simultaneous sockets of Modbus TCP. Once the card is placed inside the meter, up to 12 different software packages can request data from the meter concurrently.

**Simultaneous Data Connections**

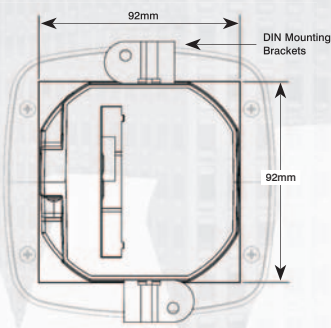
**WEB EXPLORER** provides you with direct access to all measured data through Internet Explorer without needing to download Active X Controls or Java Applets.

**SHARK® 200 METER ANSI AND DIN MOUNTING**

The unit mounts directly in an ANSI C39.1 (4" Round form) or an IEC 92 mm DIN square form. This is perfect for new installations and for existing panels. In new installations, simply use existing DIN or ANSI punches. For existing panels, pull out old analog meters and replace them with the Shark 200 meter. The meter uses standard voltage and current inputs so that CT and PT wiring does not need to be replaced.

**ANSI Mounting**

American

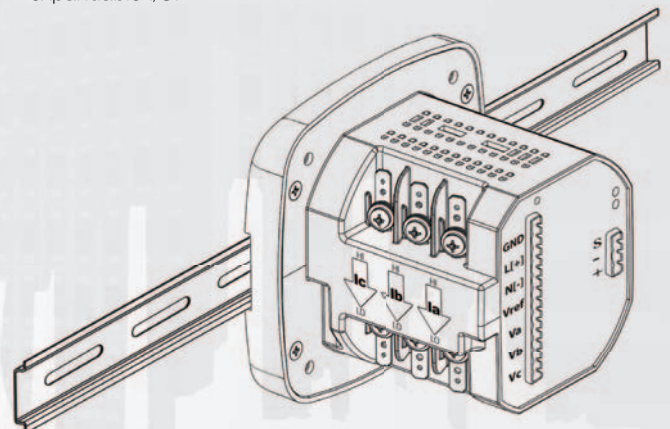
**DIN Mounting**

European

(One meter fits both standards)

**SHARK® 200T TRANSDUCER**

This transducer version of the Shark® 200 meter which does not include a display. The unit mounts directly to a DIN rail and provides an RS485 Modbus or DN P 3.0 output and the expandable I/O.

**Shark® 200T - DIN Rail Mounted Transducer**

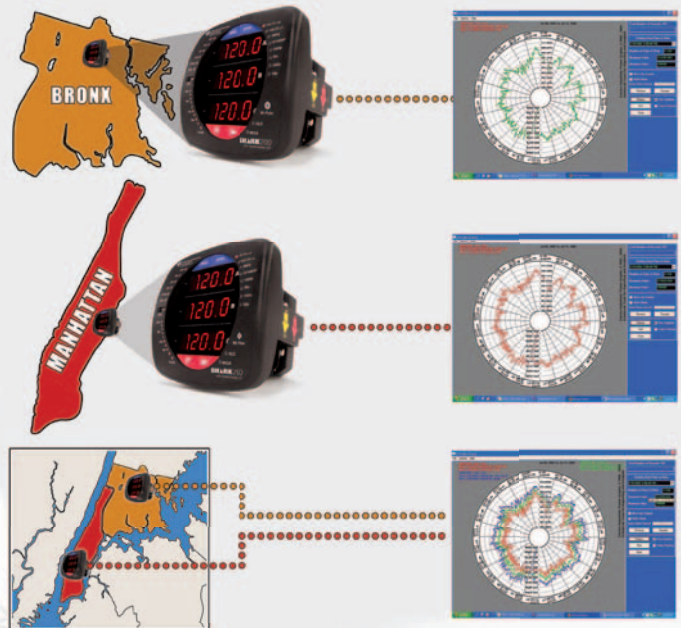


## Typical Substation Solutions

### SUBSTATION VOLTAGE RECORDING

Traditionally, voltage recording meters were relegated to high cost metering or monitoring solutions. The Shark® 200 meter can be placed throughout an electrical distribution network. The meter provides one of the industry's lowest cost methods of collecting voltage information within a Utility power distribution grid.

- Voltage reliability analysis insuring proper voltage to customers
- Compare voltage reliability throughout transmission or distribution networks
- Monitor the output of substation transformers or line regulators
- Initiate conservation voltage reduction, reducing system demand



### LOAD PROFILING

The Shark® 200 meter allows you to log substation data over time with regard to electrical usage, demand, voltage, current, PF and many other parameters. This enables a complete analysis of the power system over time.

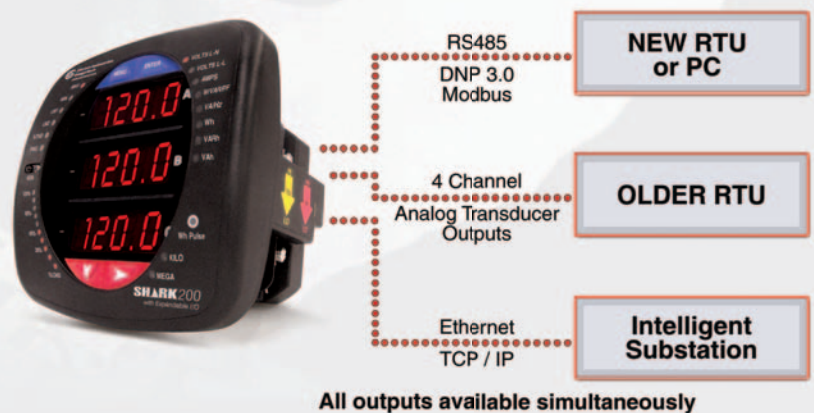
- Provide revenue accurate load profiling
- Determine substation usage
- Analyze feeder capacity and utilization
- Provide time based load profile for planning one estimation
- Data trend PF distribution and imbalances for system efficiency analysis



### LOW COST SUBSTATION TELEMETRY

The Shark® 200 meter's advanced output capability brings back data using many different communication mediums such as RS485, Ethernet and analog outputs. This insures that one meter can be used for almost every substation application no matter what communication infrastructure is needed.

- Perfect for new or retrofit applications
- Multiple com paths
- One meter provides outputs for every application
- Multiple systems and/or user accessing data simultaneously



Technical drawings of the Shark® 200 Meter Face, Side, and 200T Transducer Side. The drawings include dimensions in inches and millimeters.

**Shark® 200 Meter Face:** The face view shows a square outer frame with rounded corners and a central circular display area. Dimensions include a width of 4.85 [123.19] and a height of 4.85 [123.19]. The distance from the bottom edge to the bottom of the display area is 0.95 [24.04].

**Shark® 200 Meter Side:** The side view shows the profile of the meter. Dimensions include a total height of 5.02 [127.51], a width of 3.25 [82.55], and a distance from the bottom edge to the bottom of the display area of 0.77 [19.55]. A gasket thickness of 0.06 [1.59] is indicated at the top.

**Shark® 200T Transducer Side:** The transducer side view shows the profile of the transducer. Dimensions include a total height of 4.85 [123.19], a width of 3.25 [82.55], and a distance from the bottom edge to the bottom of the display area of 0.77 [19.55]. A distance of 0.91 [23.11] is indicated from the bottom edge to the bottom of the display area.

The image displays four detailed wiring diagrams for a 3-phase transformer, each showing the internal primary and secondary windings and their external connections. The transformer has a standard three-phase primary with terminals A, B, and C, and a neutral point N. The secondary windings are connected in a star (Y) configuration with a central neutral point.

- 3 Phase 4 Wire WYE Direct:** The secondary windings are connected in a star configuration. The secondary line voltages are labeled  $V_c$ ,  $V_b$ ,  $V_a$ , and  $V_{ref}$ . The secondary line currents are labeled  $I_a$ ,  $I_b$ , and  $I_c$ . The secondary neutral point is connected to the primary neutral point N.
- 3 Phase 4 Wire WYE with PTS:** Similar to the direct connection, but the secondary neutral point is connected to the primary neutral point N through a potential transformer (PTS).
- 3 Phase 3 Wire Delta Direct:** The secondary windings are connected in a delta configuration. The secondary line voltages are labeled  $V_c$ ,  $V_b$ , and  $V_a$ . The secondary line currents are labeled  $I_a$ ,  $I_b$ , and  $I_c$ . The secondary neutral point is connected to the primary neutral point N.
- 3 Phase 3 Wire Delta with PTS:** Similar to the direct connection, but the secondary neutral point is connected to the primary neutral point N through a potential transformer (PTS).



## Specifications

### Voltage Inputs

- 20-576 Volts Line To Neutral, 0-721 Volts Line to Line
- Universal Voltage Input
- Input Withstand Capability – Meets IEEE C37.90.1 (Surge Withstand Capability)
- Programmable Voltage Range to Any PT ratio
- Supports: 3 Element WYE, 2.5 Element WYE, 2 Element Delta, 4 Wire Delta Systems
- Burden: Input Impedance 1 Mega Ohms. Burden 0.014W at 120Volts
- Input wire gauge max (AWG 12 / 2.5mm<sup>2</sup>)

### Current Inputs

- Class 10: (0.005 to 11) A, 5 Amp Nominal
- Class 2: (0.001 to 2) A, 1A Nominal Secondary
- Fault Current Withstand: 100 Amps for 10 Seconds, 300 Amps for 3 Seconds, 500 Amps for 1 Second
- Continuous current withstand : 20 Amps for Screw Terminated or Pass Through Connections

- Programmable Current to Any CT Ratio
- Burden 0.005VA per phase Max at 11Amps
- Pickup Current: 0.1% of Nominal Class 10: 5mA Class 2: 1mA
- Pass through wire diameter: 0.177" / 4.5mm

### Isolation

All Inputs and Outputs are galvanically isolated to 2500 Volts

### Environmental Rating

Storage: (-20 to +70)° C  
Operating: (-20 to +70)° C  
Humidity: to 95% RH Non-Condensing  
Faceplate Rating:  
NEMA12  
(Water Resistant)  
Mounting Gasket Included

### Sensing Method

- True RMS
- Sampling at over 400 samples / cycle on all channels measured readings simultaneously
- Harmonics resolution to 40th order
- Waveform up to 512 samples/cycle

### Update Rate

- Watts, VAr and VA-100msec
- All other parameters-1second

### Power Supply

#### Option D2:

- (90 to 265) Volts AC and (100 to 370) Volts DC. Universal AC/DC Supply

#### Option: D:

- (18-60) Volts DC (24-48 VDC Systems)

Burden: 10VA Max

### Standard Communication Format

- 2 Com Ports (Back and Face Plate)
- RS485 Port (Through Back Plate)
- IrDA (Through Faceplate)
- Com Port Baud Rate: (9,600 - 57,600)
- Com Port Address: 1-247
- 8 Bit, No parity
- Modbus RTU, ASCII or DNP 3.0 Protocols

### KYZ Pulse

- Type Form C Contact
- On Resistance: 35 Ohms Max
- Peak Voltage: 350 VDC
- Continuous Load Current: 120 mA
- Peak Load Current: 350mA (10ms)
- Off State Leakage Current @ 350VDC: 1 uA

### Dimensions and Shipping

- Weight: 2 lbs
- Basic Unit: H4.85 x W4.85 x L4.65
- Shark® 200 meter mounts in 92mm DIN & ANSI C39.1 Round Cut-outs
- Shark® 200T Transducer DIN rail mounted
- 2-inch Din Rail Included
- Shipping Container Dimensions: 6" cube

### Meter Accuracy

- See page 3
- Note: Accuracy specs doubled for 2.5 Element connections (less accurate).

### Compliance:

- IEC 687 (0.2% Accuracy)
- ANSI C12.20 (0.2% Accuracy)
- ANSI (IEEE) C37.90.1 Surge Withstand
- ANSI C62.41 (Burst)
- IEC1000-4-2 – ESD
- IEC1000-4-3 – Radiated Immunity
- IEC 1000-4-4 – Fast Transient
- IEC 1000-4-5 – Surge Immunity

### Patents:

US 6,751,563 - Total Web Solutions  
US 7,155,350 - V-Switch™ Capability  
D525,893 - Mechanical Design  
Other Patents Pending

## Ordering Information

All fields must be filled in to create a valid part number.

	Model	Frequency	Current Input	V-Switch Pack	Power Supply	I/O Slot 1*	I/O Slot 2*
Option Numbers:	–	–	–	–	–	–	–
Example:	<b>Shark200</b>	<b>-60</b>	<b>-10</b>	<b>-V2</b>	<b>-D2</b>	<b>-INP100S</b>	<b>-X</b>

Shark200 (Meter/Transducer)	-50 50 Hz System	-10 10 Amp Secondary	-V1 Multifunction Meter Only	-D2 90-265V AC/DC	-X None	-X None
Shark200T (Transducer Only)	-60 60 Hz System	-2 2 Amp Secondary	-V2 Standard Data- Logging Memory	-D 18-60V DC	-RO1S 2 Relays / 2 Status	-RO1S 2 Relays / 2 Status
			-V3 Power Quality Harmonics		-PO1S 4 Pulses / 4 Status	-PO1S 4 Pulses / 4 Status
			-V4 Limits & Control		-1mAOS 4 channel Analog Output 0-1 (bidirectional)	-1mAOS 4 channel Analog Output 0-1 (bidirectional)
			-V5 64 Samples/cycle Waveform Recording		-20mAOS 4 Channel Analog Output 4-20mA	-20mAOS 4 Channel Analog Output 4-20mA
			-V6 512 Samples/cycle Waveform Recording		-FOSTS Fiber Optic Output ST Terminated	-FOSTS Fiber Optic Output ST Terminated
					-FOVPS Fiber Optic Output VPIN Terminated	-FOVPS Fiber Optic Output VPIN Terminated
					-INP100S 100BaseT Ethernet	-INP100S 100BaseT Ethernet

## Additional Accessories

### Communication Converters

9PIN – RS232 Cable

CAB6490 - USB to IrDA Adapter

Unicom 2500 - RS485 to RS232 Converter

Unicom 2500-F – RS485 to RS232 to Fiber Optic Converter

Modem Manager, Model #, MM1 – RS485 to RS232 Converter for Modem Communication

IrDA232 - IrDA to RS232 Adapter for Remote Read

### Compliance Documents

Certificate of Calibration, Part #: CCal – This provides Certificate of Calibration with NIST traceable Test Data.

### Current Transformer Kits

CT200K – 200/5 Ratio .94" Window 3 CTs

CT400K – 400/5 Ratio, 1.25" Window, 3 CTs

CT800K – 800/5 Ratio, 2.06" Window, 3 CTs

CT2000K – 2000/5 Ratio, 3.00" Window, 3 CTs

### CT Specifications:

Frequency: 50 to 400Hz; Insulation: 600 Volts, 10kV BIL  
Flexible Leads: UL 1015 105°C, CSA Approved, 24" Long, #16AWG

### Software Option Numbers

COMEXT3 – CommunicatorEXT 3.0 for Windows®

\* Consult factory application engineer for additional transformer ratios, types or window sizes.

\* I/O cards can be ordered separately using the above part numbers.



**Electro Industries/GaugeTech**

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## APPENDIX DD

### Gas Metering

# Ultrasonic Sonix 880



**S**onix is nothing short of a transformation in gas metering. Unlike mechanical diaphragm meters, the Sonix digital design completely eliminates moving parts, relying instead on the proven technology of ultrasonics to measure gas flow. The digital design provides a host of additional advantages. It creates a platform for extensive diagnostic capabilities and highly accurate temperature correction. Its compact size drastically reduces installation and labor costs and space requirements. A true expression of the principle that "less is more," Sonix's compact size and simple, no-moving parts design offers unprecedented levels of accuracy, reliability, and performance available in no other gas meter, all backed by a full 15 year warranty – the best in the industry.



## Specifications

### General

Meter Type: Single path ultrasonic  
 Meter Model: Sonix 880 Imperial – Sonix 25 Metric  
 Connections: 30Lt, 45Lt, 60Lt., 1A spg., #2Spg., #3Spg., #4Spg., 1-1/2" FTP, 2" FTP  
 Connection Configuration: Top in / top out, 6" center  
 Mounting: Connections Up Preferred  
 MAOP: 20 psig  
 Temperature range: -30° to 130°F correction  
 Temperature range: -30° to 150°F ambient  
 Gas Application: Clean, dry natural gas insensitive to liquid, particulate, and freezing  
 Gases with specific gravity between 0.6 (Natural Gas) and 1 (air)  
 Filter/flow conditioning: None required

### Rangeability

Capacity: 880 cfh at  $\Delta P$  of 0.5" w.c.  
 22:1 ( $\pm 1\%$  from 40 – 880 CFH)  
 110:1 ( $\pm 2\%$  from 8 – 40 CFH)  
 Low flow cutoff: 0.21 CFH  
 Capacity: 1,625 cfh at  $\Delta P$  of 2.0" w.c.  
 40:1 ( $\pm 1\%$  from 40 – 1,625 CFH)  
 203:1 ( $\pm 2\%$  from 8 – 40 CFH)  
 Low flow cutoff: 0.21 CFH

### Physical

Display: 3/8" LCD  
 4, 5, or 6 digit capacity registration  
 3 digit alarm/high resolution index  
 Imperial/metric units  
 Case: 383 aluminum alloy  
 Dimensions: 10.25" x 9.5" x 6.8"  
 Weight: 12 lbs.



### Power

Voltage range: 2.5 – 3.7 vDC  
 Battery: single "D" cell lithium thionyl chloride  
 10 year Year battery life warranty  
 Battery: field replaceable  
 Flash memory for permanent information retention without power

### Communications

Optical reading port requires optical probe and SONIXCOM software  
 Pulse type: Form A  
 Pulse duration: 50ms  
 Pulse rate: user scaleable  
 1 cu ft/pulse or liter/pulse  
 10 cu ft/pulse or liter/pulse  
 100 cu ft/pulse or liter/pulse  
 1000 cu ft/pulse or liter/pulse  
 AMR type: any Form A pulse collector

### Features

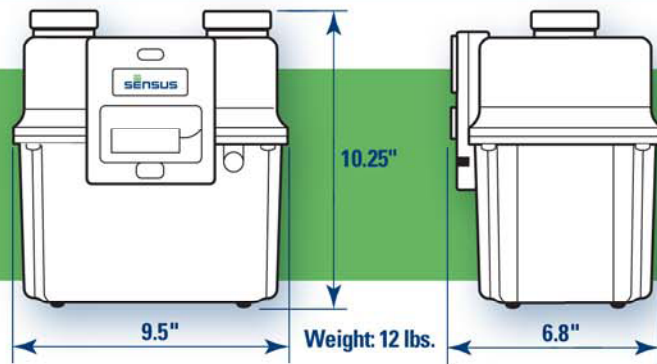
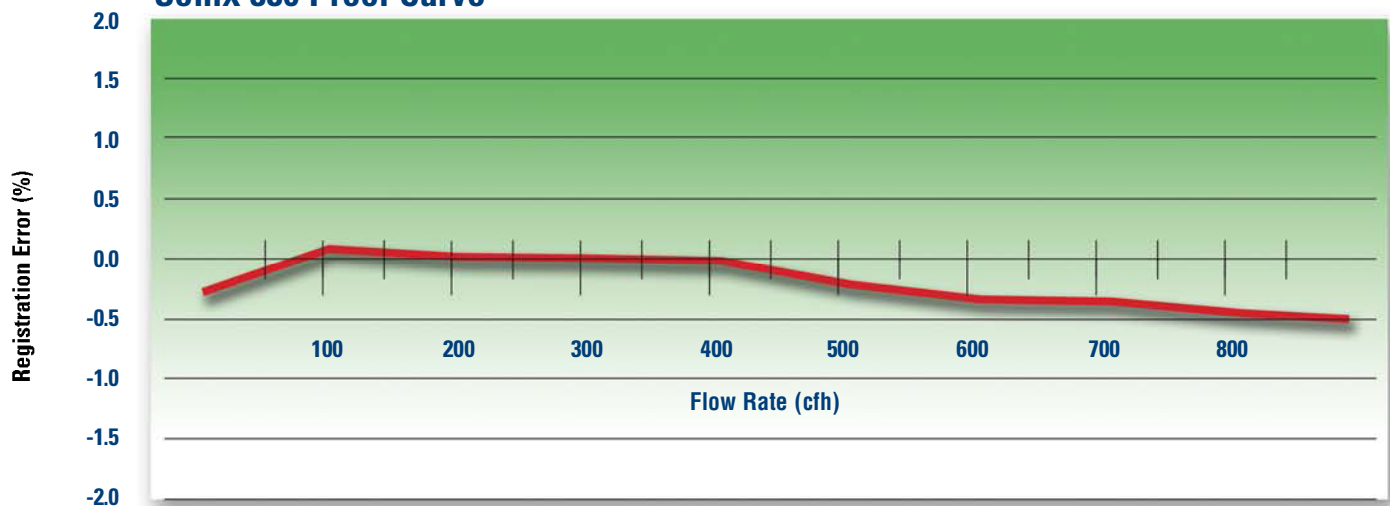
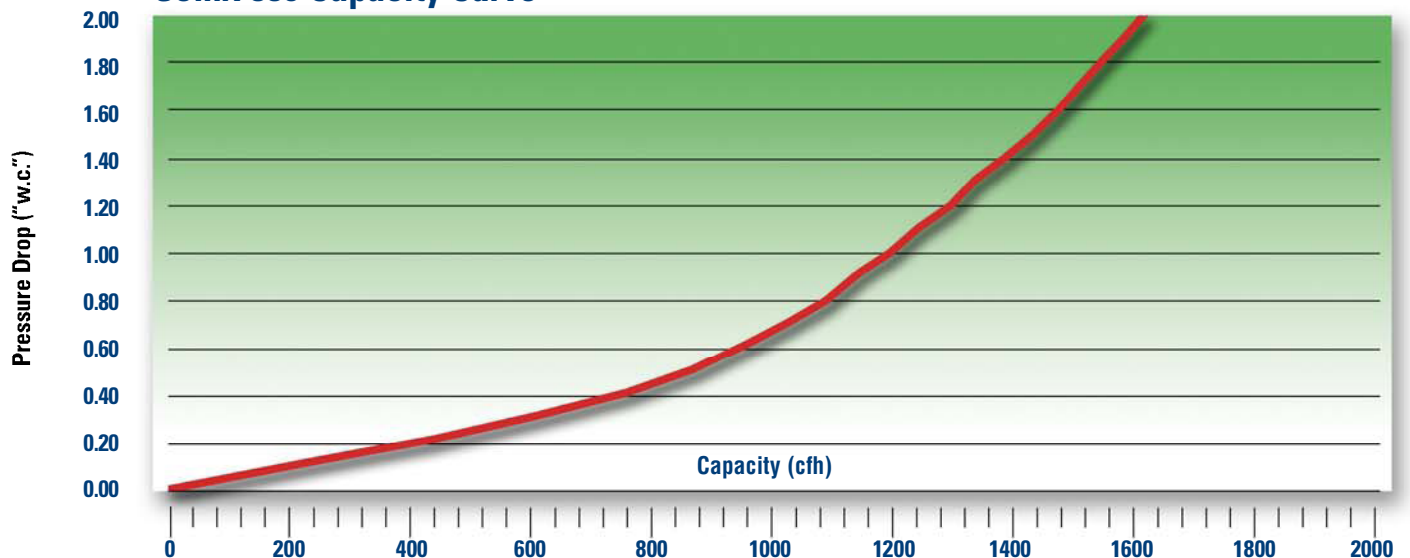
Warranty: 15-years meter  
 10-years battery  
 Diagnostics: anti-tamper alarms detect and log reverse flow and air in the meter  
 Temperature Compensation: Internal thermistor  
 Pressure Compensation: programmable Fixed Factor  
 Mechanical parts: None  
 Proof verification: compatible with sonic nozzle provers  
 Data logging: hourly for 60-days

### Regulatory Standards

Safety approvals: Certifications to CSA C22.2 No 213 Class 1 Division 2  
 Certification to ATEX II 1 G EEx ia IIB T4 Zone 0, Type i  
 Metrology Approvals:  
 Measurement Canada Approval AG-0514

# Ultrasonic Gas Meter

## Sonix 880

**SONIX**™

**Sonix 880 Proof Curve**

**Sonix 880 Capacity Curve**



805 Liberty Boulevard • DuBois, PA 15801  
 800-375-8875 • Fax: (814) 375-8460  
[www.sensus.com/gas](http://www.sensus.com/gas)

This product incorporates technology licensed from British Gas plc.

## APPENDIX EE

### Check Valves I

**For Health Hazard Applications**

Job Name \_\_\_\_\_  
 Job Location \_\_\_\_\_  
 Engineer \_\_\_\_\_  
 Approval \_\_\_\_\_

Contractor \_\_\_\_\_  
 Approval \_\_\_\_\_  
 Contractor's P.O. No. \_\_\_\_\_  
 Representative \_\_\_\_\_

## Series 909

### Reduced Pressure Zone Assemblies

Sizes: 2½" – 10" (65–250mm)

Series 909 Reduced Pressure Zone Assemblies are designed to provide cross-connection control protection of the potable water supply in accordance with national plumbing codes. This series can be utilized in a variety of installations, including health hazard cross-connections in plumbing systems or for containment at the service line entrance. With its exclusive patented relief valve design incorporating the "air-in/water-out" principle, it provides substantially improved relief valve discharge performance during the emergency conditions of combined backsiphonage and backpressure with both checks fouled.

#### Features

- Replaceable bronze seats
- Stainless steel internal parts
- No special tools required for servicing
- Captured spring check assemblies
- Fused epoxy coated & lined checks
- Industrial strength sensing hose
- Field reversible relief valve
- Air-in/water-out relief valve design provides maximum capacity during emergency conditions

#### Available Models

Suffix:

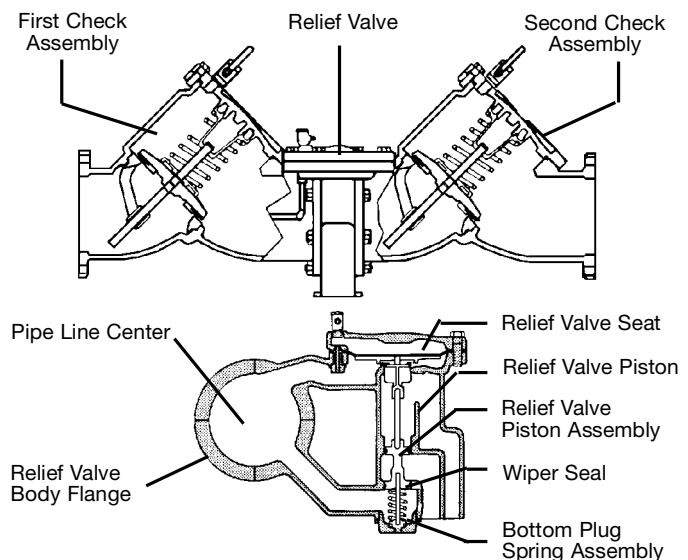
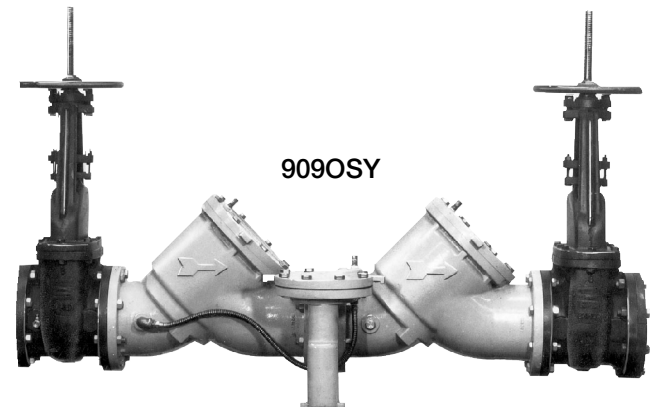
- BB – bronze body (2½", 3" only) (64, 76mm)  
 LF – without shutoff valves  
 NRS – non-rising stem resilient seated gate valves  
 OSY - UL/FM outside stem & yoke resilient seated gate valves  
 QT-FDA – FDA epoxy coated quarter-turn ball valves  
 S – cast iron strainer  
 S-FDA – FDA epoxy coated strainer

**Note:** The installation of a drain line is recommended. When installing a drain line, an air gap is necessary.

#### Specifications

A Reduced Pressure Zone Assembly shall be installed at each cross-connection to prevent backsiphonage and backpressure backflow of hazardous materials into the potable water supply. The assembly shall consist of a pressure differential relief valve located in a zone between two positive seating check valves and captured springs. Backsiphonage protection shall include provision to admit air directly into the reduced pressure zone via a separate channel from the water discharge channel. The assembly shall include two tightly closing shutoff valves before and after the valve and test cocks. The assembly shall meet the requirements of ASSE Std. 1013; AWWA Std. C511-92; CSA B64.5; and UL Classified File No. EX3185. Listed by IAPMO (UPC). Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. The assembly shall be a Watts Regulator Company Series 909.

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.



**Now Available**  
**WattsBox Insulated Enclosures.**  
 For more information, send for literature ES-WB.

**IMPORTANT: INQUIRE WITH GOVERNING AUTHORITIES  
 FOR LOCAL INSTALLATION REQUIREMENTS**

**WATTS®**



## Materials

Check Valve Bodies: FDA epoxy coated cast iron or bronze

Seats: bronze

Trim: stainless steel

Relief Valve Body: 2½"-3" (60-80mm) bronze

4"-10" (100-250mm) FDA epoxy coated cast iron

Test Cocks: bronze body ball valve

## Pressure — Temperature

Temperature Range: 33°F-110°F (5°C-43°C) continuous,  
140°F (60°C) intermittent

Maximum Working Pressure: 175psi (12.06 bar)

## Standards

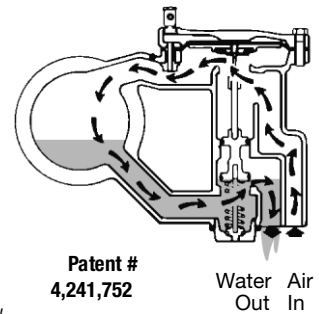
AWWA C511-92

IAPMO PS 31, SBCCI (Standard Plumbing Code)

USC manual for Cross-Connection Control, 8th Edition

## How It Operates

The unique relief valve construction incorporates two channels: one for air, one for water. When the relief valve opens, as in the accompanying air-in/water-out diagram, the right-hand channel admits air to the top of the reduced pressure zone, relieving the zone vacuum. The channel on the left then drains the zone to atmosphere. Therefore, if both check valves foul, and simultaneous negative supply and positive backpressure develops, the relief valve uses the air-in/water-out principle to stop potential backflow.



Patent #  
4,241,752

Water Out  
Air In

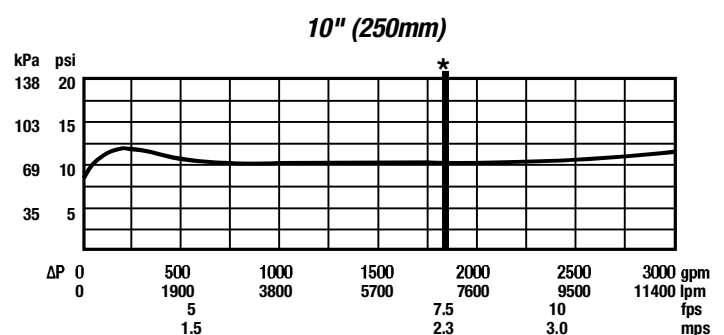
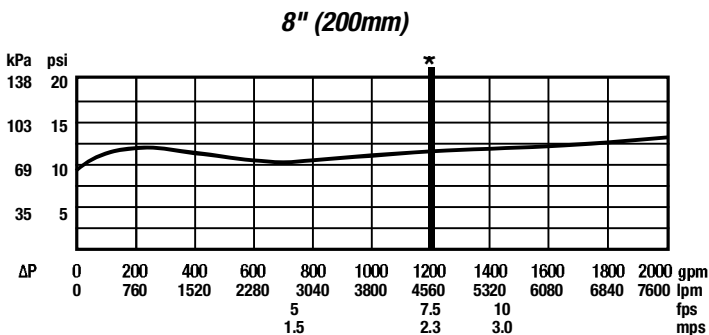
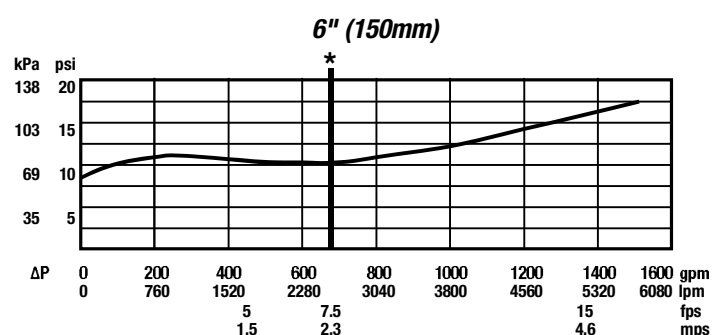
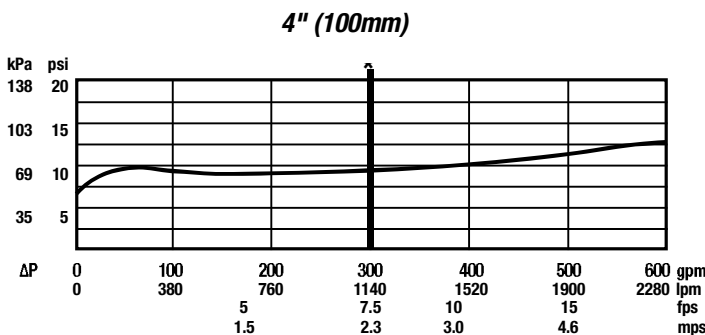
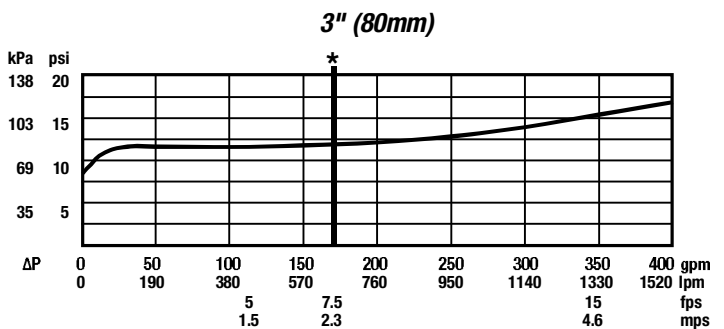
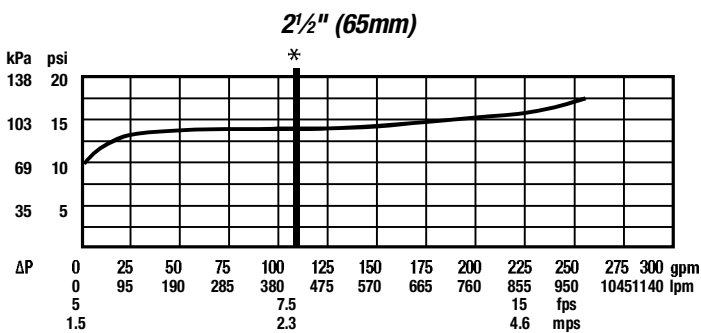
## Approvals



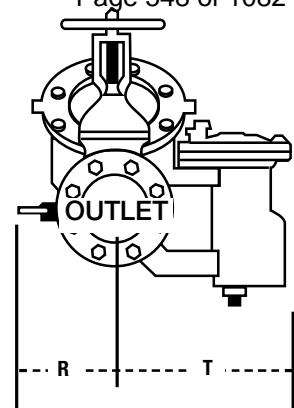
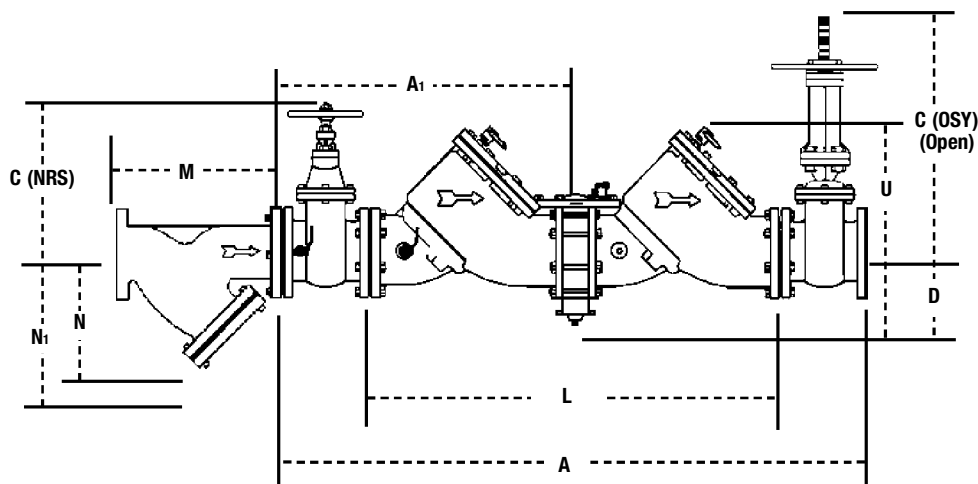
Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

## Capacity

\*Typical maximum flow rate (7.5 feet/sec.)

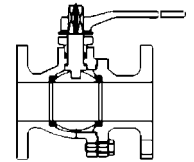


## Dimensions — Weights



Quarter-turn (QT) Valve

Watts G-4000 Series  
Ball Valves  
Send for F-G4000



NOTE: Valve may be furnished with (2) OSY or (2) NRS Shutoffs.

NOTE: Relief valve section is reversible, therefore, can be on either side and is furnished standardly as shown.

SIZE (DN)				DIMENSIONS												WEIGHT											
				C				D		L		clearance for check U	R		R (QT)		T		NRS		OSY		QT				
in.		mm		A		A1		(OSY)*		(NRS)																	
in.		mm		in.		mm		in.		mm		in.		mm		in.		mm		lbs.		kgs.		lbs.		kgs.	
2½	65	41¼	1048	20⅝	524	16⅜	416	9⅝	238	5¼	133	26⅞	663	11	279	4	102	16	406	9⅞	230	195	88.4	198	89.8	182	82.6
3	80	42¼	1073	21¼	540	18⅞	479	10¼	260	5¼	133	26⅞	663	11	279	5	127	16	406	9⅞	230	225	102	230	104	190	86
4	100	55⅝	1400	27⅝	702	22¾	578	12⅜	310	6	152	37	940	14	356	6	152	19¾	502	14⅜	365	455	206	470	213	352	160
6	150	65½	1664	32¾	832	30⅞	765	16	406	6	152	44½	1130	16	406	11	279	26	660	14⅜	365	718	326	798	362	762	346
8	200	78½	2000	39⅝	1000	37¾	959	19⅝	506	9¾	248	55¼	1403	21	533	11¼	286	11¼	286	19¼	489	1350	612	1456	660	2286	1037
10	250	93⅝	2378	46⅞	1190	45¾	1162	23⅜	605	9¾	248	67⅜	1711	21	533	12½	318	12½	318	21	533	2160	980	2230	1011	3716	1685

\*UL, FM approved backflow preventers must include UL/FM approved OSY gate valves.

## Strainer Dimensions

SIZE (DN)		DIMENSIONS				WEIGHT	
in.	mm	M		N1†		N	
		in.	mm	in.	mm	in.	mm
2½	65	10	254	10	254	6½	165
3	80	10⅞	257	10	254	7	178
4	100	12⅞	308	12	305	8¼	210
6	150	18½	470	20	508	13½	343
8	200	21⅝	549	22¾	578	15½	394
10	250	26	660	28	711	18½	470

† – Dimension required for screen removal

## Air Gap Dimensions

When installing a drain line on Series 909 backflow preventers that are installed horizontally, use 909 AG series air gaps.

		DIMENSIONS			WEIGHT	
Iron Body Model No.	Ordering Code	Series/Sizes	A in. mm	B in. mm	C in. mm	lbs kgs
909AG-F	0881378	1¼" – 3" 009/909 1¼" – 2" 009 M1 2" 009 M2	4⅜ 111	6¾ 171	2 51	3.25 1.47
909AG-K	0881385	4" – 6" 909 8" – 10" 909 M1	6⅜ 162	9⅝ 244	3 76	6.25 2.83
909AG-M	0881387	8" – 10" 909	7⅝ 187	11¼ 286	4 102	15.50 7.03

For flange size backflow preventers installed vertically (flow down), a fabricated air gap is recommended.



**For additional information, visit our website at: [www.watts.com](http://www.watts.com)**



**Backflow Prevention Products**

ES-909L 0815



**USA:** 815 Chestnut St., No. Andover, MA 01845-6098; [www.watts.com](http://www.watts.com)

**Canada:** 5435 North Service Rd., Burlington, ONT. L7L 5H7; [www.wattscanada.ca](http://www.wattscanada.ca)

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Friday, September 07, 2012

## APPENDIX FF

### Check Valves II

## For Health Hazard Applications

Job Name \_\_\_\_\_

Contractor \_\_\_\_\_

Job Location \_\_\_\_\_

Approval \_\_\_\_\_

Engineer \_\_\_\_\_

Contractor's P.O. No. \_\_\_\_\_

Approval \_\_\_\_\_

Representative \_\_\_\_\_

# Series 994

## Reduced Pressure Zone Assemblies

**Sizes: 2½" – 10" (65 – 250mm)**

Series 994 Reduced Pressure Zone Assemblies are designed to provide protection of the potable water supply in accordance with national codes. This series can be used where approved by the local authority having jurisdiction on health hazard cross-connections. Series 994 features a short lay length, light-weight stainless steel body, corrosion resistant stainless steel relief valve, and patented torsion spring check valves.

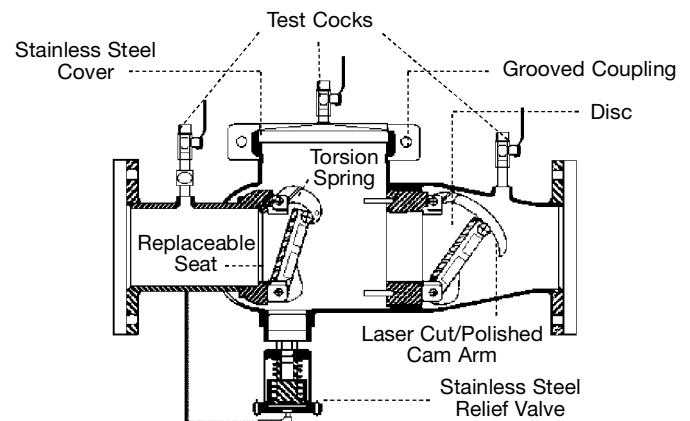
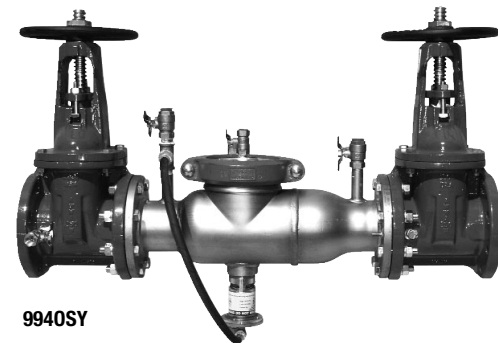
### Features

- Stainless steel construction provides long term corrosion resistance and maximum strength
- Stainless steel body is half the weight of competitive designs reducing installation & shipping costs
- Short end-to-end dimensions makes retrofit easy
- Bottom mounted relief valve reduces clearance requirements when installed against an outside wall
- Patented torsion spring check valves provides maximum flow at low pressure drop
- Thermoplastic & stainless steel check valves for trouble-free operation
- No special tools required for servicing
- Compact construction allows for smaller enclosures
- Stainless steel relief valve features a balanced rolling diaphragm to eliminate sliding seals and lower maintenance costs

### Specifications

A Reduced Pressure Zone Assembly shall be installed at each cross-connection to prevent backsiphonage and backpressure of hazardous materials into the potable water supply. The assembly shall consist of a pressure differential relief valve located in a zone between two positive seating check valves. The main valve body shall be manufactured from 300 Series stainless steel for corrosion resistance. The check valves shall be of thermoplastic construction with stainless steel hinge pins, cam arm, and cam bearing. The check valve shall utilize a single torsion spring design to minimize pressure drop through the assembly. The check valves shall be modular and shall seal to the main valve body by the use of an O-ring. There shall be no brass or bronze parts used within the check assembly or relief valve. The use of seat screws to retain the check valve seat is prohibited. All internal parts shall be accessible through a single cover on the valve assembly securely held in place by a two-bolt grooved coupling. The differential relief valve shall be of stainless steel construction and shall utilize a rolling diaphragm and no sliding seals. The relief valve shall be bottom mounted and supplied with a steel reinforced sensing hose. The assembly shall include two resilient seated shutoff valves & four ball type test cocks. The assembly shall be a Watts Regulator Company Series 994.

**IMPORTANT: INQUIRE WITH GOVERNING AUTHORITIES  
FOR LOCAL INSTALLATION REQUIREMENTS**



### Models

#### Suffix:

NRS – non-rising stem resilient seated gate valves

OSY – UL/FM outside stem &amp; yoke resilient seated gate valves

\*OSY FxG – flanged inlet gate connection and grooved outlet gate connection

\*OSY GxG – grooved inlet gate connection and flanged outlet gate connection

\*OSY GxG – grooved inlet gate connection and grooved outlet gate connection

LF – without shutoff valves

S – cast iron strainer

Available with grooved NRS gate valves - consult factory\*

Post indicator plate and operating nut available - consult factory\*

\*Consult factory for dimensions

**Note:** The installation of a drain line is recommended. When installing a drain line, a 994AGK-P air gap is necessary. See ES-AG/EL/TC for additional information.

**Now Available**  
**WattsBox Insulated Enclosures.**

For more information, send for literature ES-WB.

**WATTS®**  
**REGULATOR**

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

Friday, September 07, 2012

## Materials

All internal metal parts: 300 Series stainless steel  
Main valve body: 300 Series stainless steel  
Check assembly: Noryl®  
Flange dimension in accordance with AWWA Class D

## Standards

AWWA C511-92, CSA B64.5, UL Classified

## Approvals



Approved by the Foundation for Cross Connection Control & Hydraulic Research at the University of Southern California Sizes 2½" – 6" (65 – 250mm)

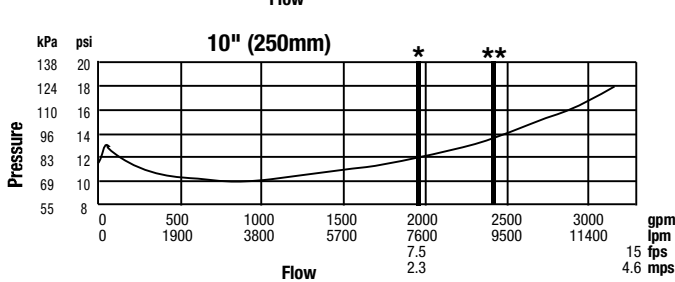
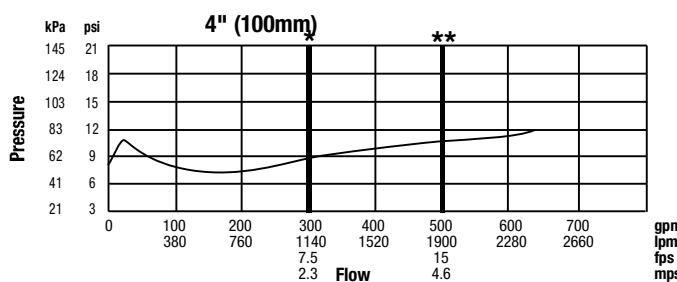
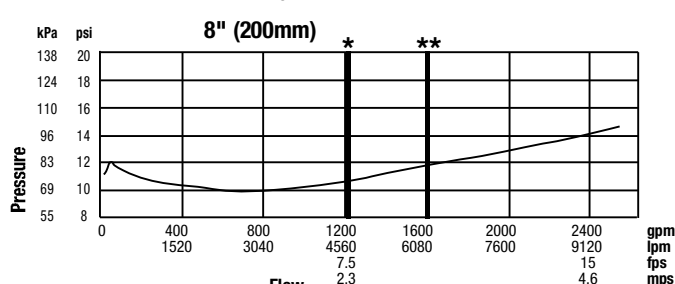
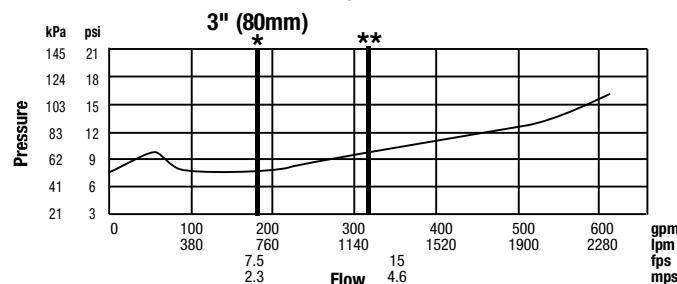
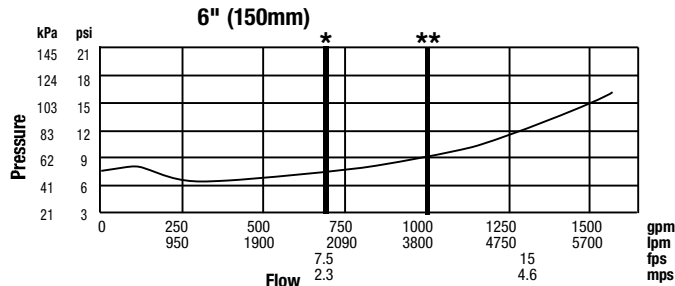
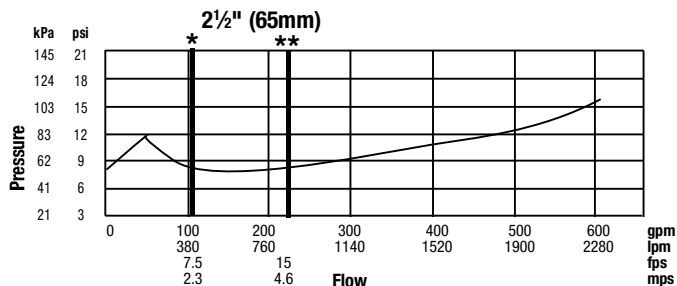
## Pressure – Temperature

Temperature Range: 33°F – 110°F (5°C – 43°C) continuous  
Maximum Working Pressure: 175psi (12.06 bar)

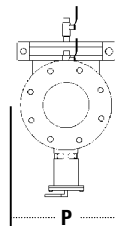
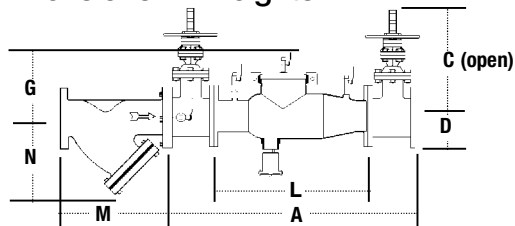
## Capacity

\*Typical maximum flow rate (7.5 feet/sec.) \*\*UL rated flow

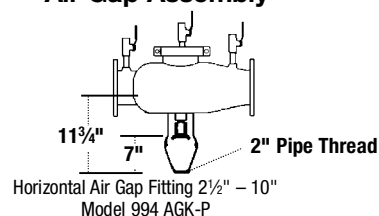
Series 994 performance as established by an independent testing laboratory (1996 UL)



## Dimensions – Weights



## Air Gap Assembly



SIZE (DN)				DIMENSIONS												WEIGHT							
		A		C (OSY)		C (NRS)		D		G		L		M		N		P		w/Gates		w/o Gates	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lb.	kg.	lb.	kg.
2½	65	37	940	16¾	416	9¾	238	10½	267	10	254	22	559	10	254	6½	165	7	178	148	67	60	27
3	80	38	965	18¾	479	10¼	260	10½	267	10	254	22	559	10⅞	257	7	178	7½	191	226	103	62	28
4	100	40	1016	22¾	578	12¾⅙	310	10½	267	10	250	22	559	12⅞	308	8¼	210	9	229	235	107	65	30
6	150	48½	1232	30¾	765	16	406	11½	292	15	381	27½	699	18½	470	13½	343	11	279	380	172	110	50
8	200	52½	1334	37¾	959	19⅓⅙	506	12½	318	15	381	29½	749	21⅓	549	15½	394	13½	343	571	259	179	81
10	250	55½	1410	45¾	1162	23⅓⅙	605	12½	318	15	381	29½	749	26	660	18½	470	16	406	773	351	189	86

Noryl® is a registered trademark of General Electric Company



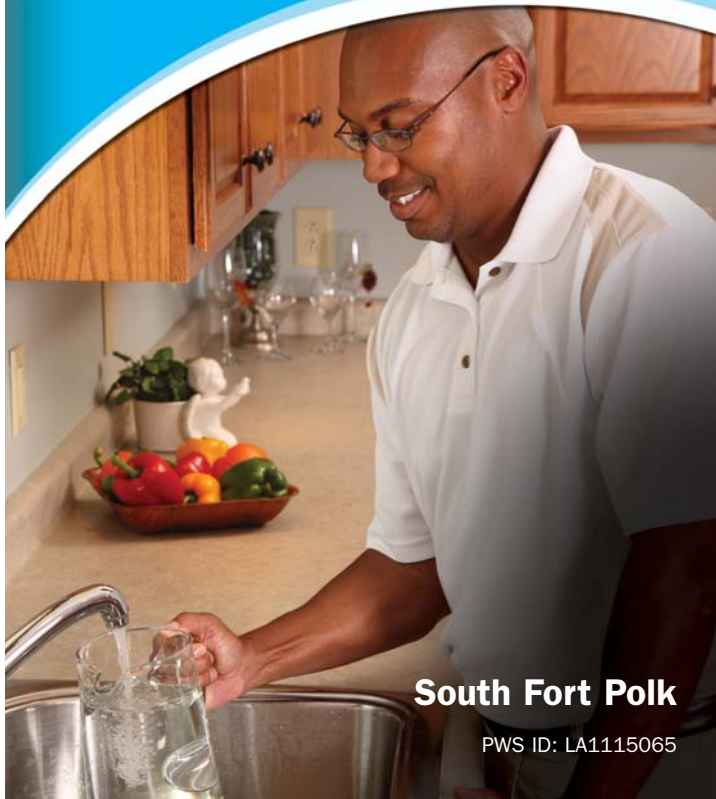
USA: 815 Chestnut St., No. Andover, MA 01845-6098; [www.wattsreg.com](http://www.wattsreg.com)

Canada: 5435 North Service Rd., Burlington, ONT. L7L 5H7; [www.wattscanada.ca](http://www.wattscanada.ca)

## APPENDIX GG

### Water Quality Report

# 2009 Annual Water Quality Report



**South Fort Polk**

PWS ID: LA1115065

**This report contains important information  
about your drinking water.**

## Continuing our Commitment

### A Message from Military Services Group Vice President

American Water – Military Services Group owns and operates water and wastewater utilities under the Utilities Privatization program and we proudly provide water services to ten military communities around the country, including yours. Our lives revolve around water. It's in everything we do, everything we use. That's why it's important that we share with our customer's information about our commitment to providing high-quality water service.

I am pleased to provide you with the 2009 Annual Water Quality Report with detailed information about the source and quality of your drinking water. We have prepared this report using the data from water quality testing conducted for your local water system from January through December 2009. You'll find that we supply water that surpasses or meets all federal and state water quality regulations.

Just as important, we place a strong focus on acting as stewards of our environment. In all of the communities we serve, we work closely with the local Department of Public Works, Civilian Engineering Departments, local Environmental Departments and state regulatory agencies to protect environmental quality, educate customers on how to use water wisely and to ensure the high-quality of your drinking water every day.

American Water was recognized internationally in 2009 as the Global Water Company of the year. This recognition was due in part to the recent growth and success of the Military Services Group and its service to military communities in the United States. Additionally, American Water celebrated a major milestone in 2009 by becoming the largest investor owned water utility in the United States with the divestiture of RWE Groups' remaining stock.

At American Water, we deliver more than just water. We deliver a key resource for public health, fire protection, the economy and the overall quality of life we enjoy. For more information or for additional copies of this report, visit us online at [www.amwater.com](http://www.amwater.com).

Sincerely,

James Sheridan  
Vice President of Military Services Group



## Water Information Sources

Fort Polk American Water Military Services Group provides water service to approximately 20,000 customers at the Fort Polk Military Post located in Vernon Parish, Louisiana. Fort Polk American Water Military Services Group is part of American Water. Founded in 1886, American Water is the largest investor-owned U.S. water and wastewater utility company. With headquarters in Voorhees, N.J., the company employs nearly 7000 dedicated professionals who provide drinking water, wastewater and other related services to approximately 15.0 million people in 35 states and Ontario, Canada.

The web sites of US EPA Office of Water, the Centers for Disease Control and Prevention, and Louisiana Department of Environmental Quality (LDEQ) provide a substantial amount of information on many issues relating to water resources, water conservation and public health. You may visit these sites as well as American Water's website at the following addresses:

**Centers for Disease Control and Prevention**  
[www.cdc.gov](http://www.cdc.gov)

**United States Environmental Protection Agency**  
[www.epa.gov/safewater](http://www.epa.gov/safewater)

**Louisiana Department of Environmental Quality**  
[www.deq.louisiana.gov/portal/](http://www.deq.louisiana.gov/portal/)

**American Water**  
[www.amwater.com](http://www.amwater.com)

**American Water Works Association**  
[www.awwa.org](http://www.awwa.org)

**Safe Drinking Water Hotline:** (800) 426-4791

## What is a Water Quality Report?

To comply with Louisiana Department of Environmental Quality (LDEQ) and the U.S. Environmental Protection Agency (EPA) regulations, American Water issues a report annually describing the quality of your drinking water. The purpose of this report is to provide you an overview of last year's (2009) drinking water quality. It includes details about where your water comes from and what it contains. We hope the report will raise your understanding of drinking water issues and awareness of the need to protect your drinking water sources.

## How is Your Water Treated?

Current treatment processes include disinfection, addition of an inhibitor for corrosion control and fluoridation is provided for reduction of dental cavities. Throughout the process dedicated plant operations and water quality staff continuously monitor and control these plant processes to assure you, our customers, a superior quality water.

## Share This Report

Landlords, businesses, schools, hospitals and other groups are encouraged to share this important information with water users at their location who are not billed customers of Fort Polk American Water and therefore do not receive this report directly.

## Water Conservation Tips

**Conservation measures you can use inside your home include:**

- Fix leaking faucets, pipes, toilets, etc.
- Replace old fixtures; install water-saving devices in faucets, toilets and appliances.
- Wash only full loads of laundry.
- Do not use the toilet for trash disposal.
- Take shorter showers.
- Do not let the water run while shaving or brushing teeth.
- Soak dishes before washing.
- Run the dishwasher only when full.

**You can conserve outdoors as well:**

- Water the lawn and garden in the early morning or evening.
- Use mulch around plants and shrubs.
- Repair leaks in faucets and hoses.
- Use water-saving nozzles.
- Use water from a bucket to wash your car, and save the hose for rinsing.

## Source Water Assessment Completed

A Source Water Assessment Program (SWAP) is a result of the 1996 amendments to the Federal Safe Drinking Water Act (SDWA). Those amendments require all states to establish a program to assess the vulnerability of public water systems to potential contamination. The Louisiana Department of Environmental Quality (LDEQ) completed the Source Water Assessment of waters of Louisiana by watershed. The assessment found that the reservoirs are potentially susceptible to contamination due to runoff from agricultural land. More detailed information regarding the Source Water Assessment for Louisiana Reservoirs can be found by contacting the Louisiana Department of the Environmental Quality at (866) 896-LDEQ, or [www.deq.louisiana.gov/portal/tabid/2986/Default.aspx](http://www.deq.louisiana.gov/portal/tabid/2986/Default.aspx).

## Where Does My Water Come From?

The sources of supply for South Fort Polk are as follows:

Source Name		Source Water Type
Well 12	USGS V 112	Ground Water
Well 14D	USGS V 496	Ground Water
Well 11	USGS V 518	Ground Water
Well 7	USGS V 510	Ground Water
Well 8	USGS V 420	Ground Water
Well 9	USGS V 497	Ground Water

## What is the pH (acidity) range of your water?

Water in the distribution system averages about 7.1 pH units. A pH of 7.0 is considered neutral, neither acidic nor basic.

## Is there fluoride in your water?

American Water adds approximately 0.61 ppm fluoride to the Fort Polk American Water treated water supply.

## Special Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791) or by calling our Customer Service Center at (800) 685-8660.

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.

Fecal coliforms and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infant, young children, some of the elderly, and people with severely compromised immune systems.

Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta particle and photon radioactivity in excess of the MCL over many years may have an increased risk of getting cancer.

## Information About Lead

### Is there lead in my water?

Although we regularly test lead levels in your drinking water, it is possible that lead and/or copper levels at your home are higher because of materials used in your plumbing. If present, elevated levels of lead can cause serious problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Fort Polk American Water is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead and copper exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the National Lead Information Center (800-LEAD-FYI) or the EPA Safe Drinking Water Hotline at 1-800-426-4791 or at <http://www.epa.gov/safewater/lead>.

## Substances Expected to be in Drinking Water

To ensure that tap water is of high quality, U.S. Environmental Protection Agency prescribes regulations limiting the amount of certain substances in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

The Fort Polk water treatment processes are designed to reduce any such substances to levels well below any health concern. The source of drinking water (both tap water and bottled water) includes rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

### Contaminants that may be present in source water include:

**Microbial Contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife.

**Inorganic Contaminants**, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

**Pesticides and Herbicides**, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

**Organic Chemical Contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff, and septic systems.

**Radioactive Contaminants**, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

### How to Read the Data Tables

American Water-Military Service Group conducts extensive monitoring to ensure that your water meets all water quality standards. The results of our monitoring are reported in the previous tables. While most monitoring was conducted in 2009, certain substances are required to be monitored less than once per year and represent the most current results available. For help with interpreting this table, see the "Table Definitions" section.

Starting with a **Substance**, read across.

**Year Sampled** is usually in 2009 or year prior.

**MCL** shows the highest level of substance (contaminant) allowed. **MCLG** is the goal level for that substance (this may be lower than what is allowed). **Average Amount Detected** represents the measured amount (less is better). **Range** tells the highest and lowest amounts measured. A

**Yes** under **Compliance Achieved** means the amount of the substance met government requirements. **Typical Source** tells where the substance usually originates.

Unregulated substances are measured, but maximum allowed contaminant levels have not been established by the government.

### Table Definitions and Abbreviations

- **Action Level:** The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.
- **MCL (Maximum Contaminant Level):** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- **MCLG (Maximum Contaminant Level Goal):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **MRDL (Maximum Residual Disinfectant Level):** The highest level of disinfectant routinely allowed in drinking water. Addition of a disinfectant is necessary for control of microbial contaminants.
- **MRDLG (Maximum Residual Disinfectant Level Goal):** The level of drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.
- **mrem/year:** Millirems per year (a measure of radiation absorbed by the body).
- **NA:** Not applicable
- **ND:** Not detected.
- **NTU - Nephelometric Turbidity Units:** Measurement of the clarity, or turbidity, of water.
- **pCi/L (picocuries per liter):** Measurement of the natural rate of disintegration of radioactive contaminants in water (also beta particles).
- **pH:** A measurement of acidity, 7.0 being neutral.
- **ppm (parts per million):** One part substance per million parts water, or milligrams per liter.
- **ppb (parts per billion):** One part substance per billion parts water, or micrograms per liter.
- **ppt (parts per trillion):** One part substance per trillion parts water, or nanograms per liter.
- **TT (Treatment Technique):** A required process intended to reduce the level of a contaminant in drinking water.

## Water Quality Statement

American Water owns and operates the water distribution system on Fort Polk. American Water is required to sample for many different contaminants in your drinking water annually. The tables below only contain sample results for contaminants that were detected in your drinking water. Some contaminants are required to be sampled for less than annually and in these cases, the most recent sample results are provided below and the year they were collected.

During the period covered by this report we had below noted violations of drinking water regulations.

Type	Category	Contaminant	Compliance Period
No violations occurred in the calendar year of 2009.			

Regulated Contaminants								
Substance (units)	Year Sampled	MCL	MCLG	Highest Value	Range	Compliance Achieved	Typical Source	
Inorganic Contaminants								
Arsenic (ppb)	2009	10	0	1	1	Yes	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes	
Fluoride (ppm)	2009	4	4	0.1	0.1	Yes	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories	
Radionuclides								
Gross beta (pCi/L)	2009	5	0	4.5	4-5	Yes	Erosion of natural deposits	
Disinfectant And Disinfection By-Products								
Haloacetic Acids (HAA5)(ppb)	2009	60	0	1.2	0.8 - 1.6	Yes	By-product of drinking water disinfection	
Total Trihalomethanes (TTHMs)(ppb)	2009	80	0	2	2	Yes	By-product of drinking water disinfection	
Microbiological Contaminants								
Our water system tested a minimum of 10 samples per month in accordance with the Total Coliform Rule for microbiological contaminants. During the monitoring period covered by this report, we had the following detections for microbiological contaminants.								
Substance (units)	Year Sampled	MCL			MCLG	Result	Compliance Achieved	Typical Source
Coliform, Total (TCR)	2009	More than one positive routine sample per month			0	1 positive sample in September	Yes	Naturally present in the environment
E. Coli	2009	A routine sample and a repeat sample are total coliform positive and one is also fecal positive/E. Coli positive			0	1 positive sample in September	Yes	Human and animal fecal waste
Lead And Copper								
Substance (units)	Year Sampled	AL	MCLG	90th Percentile	95th Percentile	Sites Above AL	Compliance Achieved	Typical Source
Copper (ppm)	2008	1.3	0	0.1	0.2	0	Yes	Corrosion of household plumbing; Erosion of natural deposits
Lead (ppb)	2008	15	0	ND	ND	ND	Yes	Corrosion of household plumbing systems; Erosion of natural deposits

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Building 3304  
 Fort Polk, La. 71459  
 Phone: 337-531-2967  
 Fax: 337-653-3508

### Fort Polk Utility Location & Dig Permit Request

Date	
Location	
What is being done	
POC Name/Company	
POC Number	

**Directions:**

1. **Contractor** will **MARK AREA** to be excavated in **WHITE**.
2. Louisiana Law requires you (**CONTRACTOR**) to contact Louisiana 1 Call, representing all private and public utility companies. Dial 1-800-272-3020 – seven days in advance and have digging location information available at time of call. Any company with utilities in the area will mark the respective utility **within 48 hours**.

Louisiana 1 Call Ticket Number: \_\_\_\_\_

3. For Telephone, Data Lines and Fiber Optic Line utility locations on Fort Polk:
  - **Contact DOIM/ATS Contractor (GSTek) at 531-4019, bldg 3604**
  - Request location services seven days prior to digging.
  - Contractors are responsible to maintain marks.

DOIM/ATS Ticket Number: \_\_\_\_\_

4. Sprint/ADSS 537-4711 or **208-2025**.

Sprint/ADSS Ticket Number: \_\_\_\_\_

5. Gas and Exterior Electric. When you have completed 1 thru 4 above, hand carry this form along with a sketch of the area to be excavated to the **Work Reception Office in Bldg. 3307**. DPW will initiate service orders to locate gas and exterior electric. When you have received these service orders bring this form along with sketches to **Bldg 3304**. After all dates and times have been met you may pick up the approved dig permit, and proceed to excavate.

- Ext. Electric      Service Order #: \_\_\_\_\_
- Natural Gas      Service Order #: \_\_\_\_\_
- Chilled Water      Service Order #: \_\_\_\_\_
- Hot Water      Service Order #: \_\_\_\_\_

6. Permit to dig on Fort Polk is approved on \_\_\_\_\_

Approved by PRIDE Public Works Dpt. \_\_\_\_\_

## APPENDIX II

### Hyperlinks for Additional Information

Louisiana Department of Health and Hospitals Design Summary Forms (Ref. 6.3.1i):

<http://www.dhh.louisiana.gov/offices/publications.asp?ID=204&Detail=1092>

American Water Design Guidance:

<http://www.amwater.com/>

<http://www.amwater.com/files/Fort%20Hood%20Design%20Guide.pdf>

AECC 4.0 CADD Standards

<https://cadbim.usace.army.mil/CAD>

Southwestern Division Architectural and Engineering Instructions Manual (AEIM)

[http://www.swd.usace.army.mil/capabilities/SWD\\_AEIM\\_Jan\\_2003.pdf](http://www.swd.usace.army.mil/capabilities/SWD_AEIM_Jan_2003.pdf)

UFC - Fire Protection Engineering for Facilities

[http://www.wbdg.org/ccb/DOD/UFC/ufc\\_3\\_600\\_01.pdf](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_600_01.pdf)

DoD Minimum Antiterrorism Standards for Buildings

[http://www.wbdg.org/ccb/DOD/UFC/ufc\\_4\\_010\\_01.pdf](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_010_01.pdf)

I3A Technical Criteria Feb. 2010 (Communications Requirements)

<http://www.lrl.usace.army.mil/ed2/article.asp?id=1416&MyCategory=212>



## APPENDIX JJ

### FIRE STATION ALERTING SYSTEMS



WESTNET®



# THE CALL

*When the constant fight is against the clock, timing is everything. When the difference between life and death comes down to a matter of seconds, you need all the help you can get - you are performing tasks during the critical golden hour. When the difference may be between a knock down or a flashover, time is either your friend or your foe. Whether the call is a medical emergency or a structure fire, how quickly you arrive on scene can determine your success. This ongoing battle hasn't changed since the fire service was first formed in early America. However, the way in which you respond to these emergencies has changed - it has improved your ability to make a save. The tools that you use have also changed. Horse-drawn steamers have become powerful pumpers and aerials. Manual jacks have become hydraulic cutting tools and spreaders. Bucket brigades have been replaced by large diameter hose lines and master streams. Firefighting is steeped in a proud and honorable tradition and has progressed in a manner that has revolutionized the way it performs.*

*Caught between tradition versus technology, firefighters are doers - they get the job done and will use any tool or advantage they can to make it happen. The equipment you reach for on scene is essential in helping you make the save and fight the fire, yet the wheels would not roll out of the house if you didn't get the call in the station - the alert from dispatch is fundamental to your response. Your size up begins as soon as you get the information from dispatch and the way in which you receive this information can make all of the difference. Information is power - it arms you with the details you need to prepare for what you and your crew might face.*

*The First-In® Fire Station Alerting System was designed to provide all of the information necessary for crews to respond in the fastest possible manner. First-In uses ramped, cardiac-kind tones and visual display devices located throughout the station to give you the key information you need to respond. The First-In Fire Station Alerting System is a reliable, dependable, modular system that can be scaled for use in any department. First-In is widely used in career, volunteer, combination and military departments throughout the country.*

*There are eight words that encompass the First-In® Maltese Cross that is our logo and they are a creed to the men and women who build the **First-In Fire Station Alerting System-  
Courage, Tradition, Determination, Teamwork, Loyalty, Honor, Dedication and Service.***



[www.FirstInAlerting.com](http://www.FirstInAlerting.com)

## FEATURES AND BENEFITS

REDUCES RESPONSE TIMES  
 LOWERS FIREFIGHTER STRESS LEVELS  
 RAMPED, HEART-SAFE TONES & RED STATION LIGHTING  
 VISUAL ALERTING - TV/VIDEO MESSENGERS  
 COMPANY SPECIFIC, BEDSIDE ALERTING DORM REMOTES  
 AUTOMATED DISPATCH - TEXT-TO-SPEECH  
 MULTIPLE WAYS OF ACTIVATION - REDUNDANCY  
 INTEGRATES WITH CAD SYSTEMS  
 NETWORK BASED ALERTING  
 EMAIL AND TEXT ALERTING  
 PAGER ALERT NOTIFICATION  
 MODULAR DESIGN VERSATILITY  
 NFPA COMPLIANT  
 INSTALLED IN NEW, REMODELED OR EXISTING STATIONS  
 INCREASES FIREHOUSE SAFETY  
 ENVIRONMENTALLY FRIENDLY LED LIGHTING

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SYSTEMS**

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# RESPONSE TIME



## ***FIRST-IN® FIRE STATION ALERTING SYSTEMS***

Current recommendations of response time standards indicate optimal response at one-minute turnout time and four-minute response time. Recent reports suggest that "barely over a third of departments nationwide meet national standards for response time." Given the diverse range of operations that fire/rescue departments must perform, the environment and scenes have forever changed. "In the 1970's, scientists at the National Institute of Standards and Technology found that at that time, people had about 17 minutes to escape before being overcome by heat and smoke. Today, the estimate is three minutes." Bill Dedman. *Deadly Delays: The Decline Of Fire Response*, Boston Globe.

Westnet®, Inc. understands the critical nature of responding to the scene of an emergency in the quickest time possible. The First-In Fire Station Alerting System uses cutting edge technology and is specifically designed to reduce response time. "For years, the conventional wisdom was that help must come within 10 minutes (for cardiac patients). But new findings from the Mayo Clinic show that lives actually are saved or lost within six minutes." Robert Davis. *Six Minutes To Live Or Die*, From USA TODAY, a division of Gannett Co., Inc.

***REDUCED RESPONSE TIME IS CRITICAL TO SUCCESSFUL EXECUTION OF EVERY EMERGENCY SERVICE YOU PERFORM.***



# FIREFIGHTER HEALTH & SAFETY

## ***The Nature Of The Job***

"Heart attacks continue to be the leading cause of death for on-duty firefighters", according to U.S. Fire Administration reports. The NFPA states that "heart attacks due to stress and overexertion are the leading cause of fatal injury and usually account for close to half of total deaths." Rita F. Fahy and Paul R. LeBlanc, Firefighter Fatalities In The United States, NFPA Journal. While the rigors of fighting fires, victim extrication, swift water and structural collapse rescues are for the most part obvious, the stress of receiving alerts in the fire station is not so apparent. Year after year of shocking alarms, bright lights and constant sleep deprivation from night calls takes its toll on the human body. "Few realize that from the time the alarm sounds in the station until the call clears [and the dispatch is completed], heart rates soar to astonishing levels that may be sustained for more than an hour. "Studies show that within 15 seconds after an alarm sounds, heart rates soar 61 beats per minute on average. While resting, our heart beats about 60 to 70 times each minute. Therefore, the heart rate nearly doubles within 15 seconds of an alarm." Garrett Law. Hearts A Fire. Kinder Alarm Systems & Physical Conditions May Defuse The Heart Attack Bomb Among Firefighters, Fire Rescue Magazine.

***REDUCING FIREFIGHTER STRESS LEVELS IS A PRIMARY CONCERN.***

## ***Making A Difference***

There is a difference between being awakened for a call and being scared to death. As the leader in fire station alerting, Westnet, Inc. has proven that technology can make a significant improvement in the quality of life for fire personnel and the public they serve. Westnet's First-In Fire Station Alerting System is the first turnkey solution engineered for firefighters to reduce response time and firefighter stress. First-In's patented technology uses Cardiac Kind ramped tones and a human voice pre-announcement to awaken firefighters. First-In Knight Vision® Lighting provides low intensity red light to illuminate dormitories and exit corridors, reducing the cardiac and optical stress during night calls.

***LOUD TONES ARE NO LONGER NEEDED TO ALERT FIRE AND EMS CREWS.***

## ***The First-In® Solution***

Westnet's First-In Fire Station Alerting System utilizes a series of remote alerting modules placed strategically throughout the fire station to notify fire and EMS personnel of an emergency call in the quickest, safest and most advanced means possible. The modular design of the First-In Fire Station Alerting System provides public safety agencies affordable equipment options, which range from basic alerting functions to maximum alerting capability and full control of the fire station.

The First-In Fire Station Alerting System provides your department with a wide variety of customized alerting methods, design and expansion capabilities, service software, unmatched reliability and unsurpassed technology. Just as each fire department has its own demands, each fire station may have needs unique to the challenges its crews face on a daily basis (i.e. aviation crash rescue stations). The flexibility of the First-In System allows your department to design an alerting system that addresses these distinct needs.

***Throughout the following pages, you will see an array of First-In Smart Station® alerting modules specifically designed to reduce response time and minimize firefighter stress levels.***





# MASTER CONTROL UNIT™



## Overview

The First-In Master Control Unit (MCU) is the heart of the First-In Fire Station Alerting System. Although the final design of each station may vary, all First-In Systems begin with and require the MCU. The MCU receives all alerts sent from the dispatch center. Upon activation from dispatch, the MCU sends a pre-announcement throughout the station, notifying emergency personnel of the assigned company, the nature of the call and the tiered response level required. The MCU can also be equipped with the First-In Automated Voice Dispatch™ (FIAVD) option, which is a fully automated text-to-speech function that automatically announces units assigned to the call, nature of the emergency, the incident address and any additional call information.

The MCU communicates the pre-announcement and dispatch information through the First-In Smart Station alerting modules in this catalog, producing both an audible and visual notification of the alert. For stations which do not utilize Smart Station alerting modules, the MCU activates the station's existing lights and public address systems.

The MCU has several ways in which it can be activated. All methods can be used as a primary means of activation or a back-up method, providing many layers of redundancy.

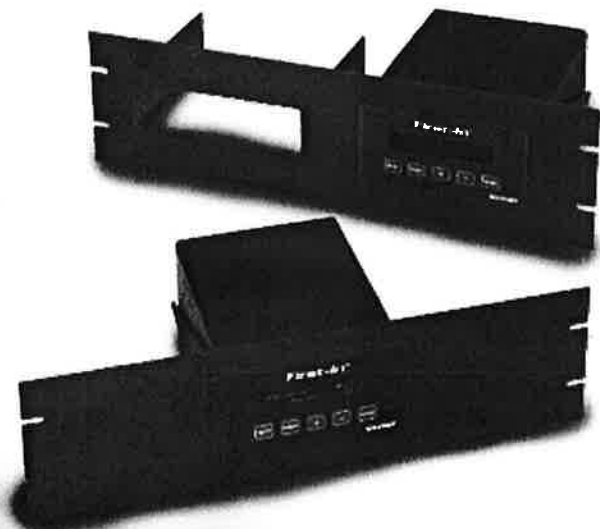
### COMMONLY LOCATED IN:

Watch rooms, telecom  
rooms, communications  
and IT rooms.



### MCU MOUNTING BRACKETS:

Space in fire stations can be difficult to come by. The MCU does not require large amounts of rack space and can be mounted in a small cabinet or in a rack if desired.



**MCU PRE-ANNOUNCEMENT**

As soon as the dispatcher learns the nature of the call, he or she alerts the MCU in the station. Conveying the assigned units, nature of the emergency, response level and geographical identifier provides enough information to allow crews to instantly begin responding, reducing turnout and company response times. For example, a pre-announcement of "Engine 3, Cardiac Arrest, Delta Response, Box Number 1524" designates a medical aid call. While the crews prepare to leave the station, the dispatcher continues collecting additional incident information. This information can be displayed on the First-In visual alerting modules located throughout the fire station, and a printout can be sent station printer to provide all details necessary for the responding company (e.g., incident address, units on the call, call type and other incident information). During most calls, this feature reduces the need to communicate with the dispatcher, which eliminates redundant dispatch information and clears the dispatch channel.

**THE MCU PRE-ANNOUNCEMENT FEATURE IS CRUCIAL IN REDUCING RESPONSE TIME.**

**PRE- ANNOUNCEMENT AND STRESS REDUCTION**

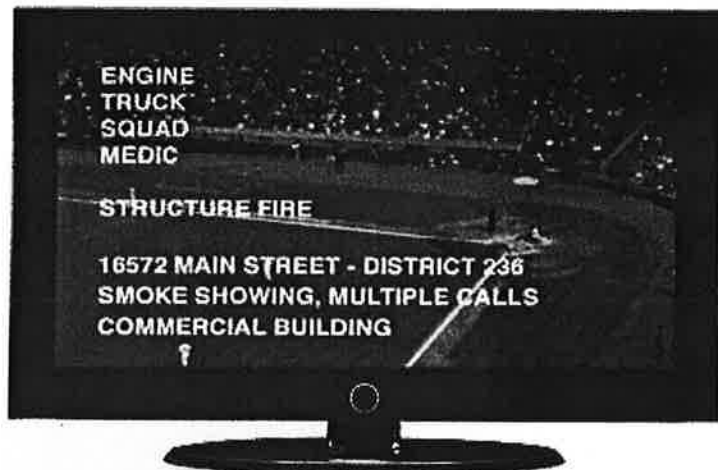
Deafening bells used to alert firefighters are no longer needed to signal an emergency call. The MCU uses Cardiac Kind tones which precede the pre-announcement. The tones and the pre-announcement are automatically adjusted in volume for daytime and nighttime. In the morning, the MCU tone and pre-announcement audio levels increase, as ambient noise in the station is higher during the day. In the evening, when station noise is quieter, the MCU automatically decreases its volume levels. The result is that the MCU awakens firefighters without the extreme stress that startling or ear-piercing tones can produce.

**ACTIVATION METHODS & BACK-UP ALERTING**

COMPUTER AIDED DISPATCH  
IP/NETWORK ALERTING  
P25 DIGITAL RADIO  
TWO-TONE SEQUENTIAL  
HIGH-SPEED DTMF  
DATA RADIO  
TRUNKING RADIO PAGING ALERT  
DEDICATED PHONE LINE  
CONTACT CLOSURES  
PAGERS



# ALERTING MODULES



## VIDEO MESSENGER™

The First-In Video Messenger provides a visual dispatch of the call on a station television. The First-In Video Messenger can be used and located anywhere a television exists in the station.

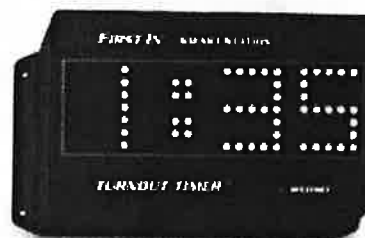
For fire departments using IP network alerting from Computer Aided Dispatch (CAD), the Video Messenger can display which apparatus is needed, the type of call (medical aid, structure fire, etc.), the address or location of the incident and other relevant information. For fire departments not using IP alerting, the Video Messenger will notify the crew of an incoming alert.

### COMMONLY LOCATED IN:

Dayrooms, kitchens, fitness  
rooms, apparatus bays  
and offices.

### Video Messenger Features

- Immediately displays call information on the television
- Unit assignment, incident type and address information can be displayed
- One Video Messenger is needed for each television
- An unlimited number of Video Messengers can be used

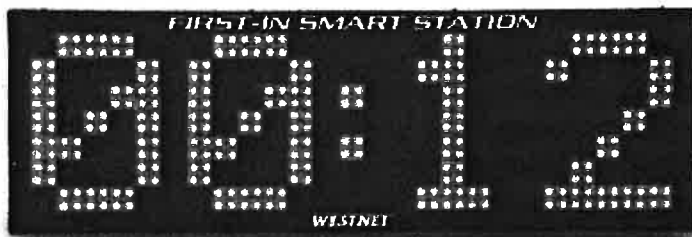


## TURNOUT TIMER™

The First-In Turnout Timer provides a visual readout of the time elapsed since the call was received at the fire station. The First-In Turnout Timer is used to assist firefighters in meeting the department's response time goals and equips them with the information they need to continue working towards decreasing turnout times and getting out of the station quickly.

### Turnout Timer Features

- Timing begins when the fire station receives the alert from dispatch
- Assists in monitoring the status of meeting NFPA 1710 & 1720
- Resets at the end of the alert sequence
- Available in small, medium and large sizes



### COMMONLY LOCATED IN:

Apparatus bays, dayrooms  
and watch rooms.



# ALERTING MODULES

## DORM REMOTE<sup>®</sup>

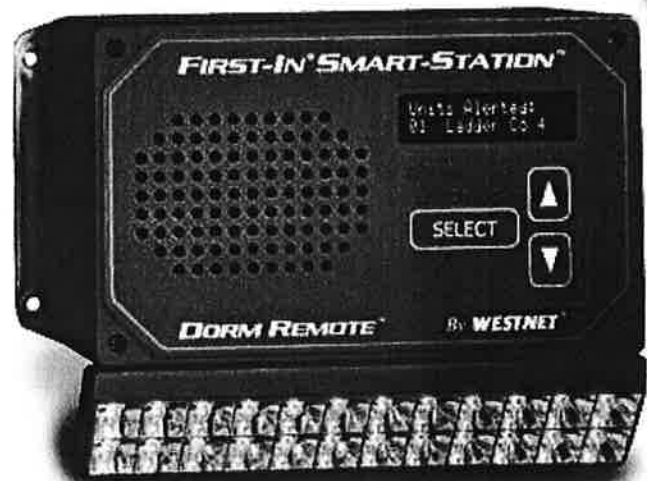
The Dorm Remote<sup>®</sup> awakens first responders with low, ramping tones, a soft human voice pre-announcement and Knight Vision Lighting, which provides a red glow of light distributed around the room. From the front panel of each Dorm Remote located in the dormitory, the crew member selects his or her apparatus assignment. For example, a paramedic would program "paramedic" into his or her Dorm Remote when they get on shift. Any alarm that comes in for a paramedic activates all "paramedic" Dorm Remotes. Dorm Remotes programmed for truck, engine or other companies will not activate. This feature allows firefighters not needed on calls to continue sleeping and reduces the common sleep deprivation experienced by firefighters awakened for calls to which they need not respond.

Each Dorm Remote automatically resets in the morning at a time designated by the fire department to an "All Zones" mode. This mode announces all calls until the firefighter sets the Dorm Remote to his or her company and disables all other zones. Automatically returning the Dorm Remote to an "All Zones" mode prevents missed calls in the event a firefighter forgets to program in his or her specific company before going to sleep.

### **Dorm Remote Features**

- Reduces chronic sleep deprivation by alerting only crews needed on call
- Ramped, Cardiac Kind tones
- Ramped, Knight Vision red lighting
- Programmable from front panel at each bed

*"Sleep deprivation is linked with increased errors in tasks requiring alertness, vigilance and quick decision-making." IAFC. The Effects of Sleep Deprivation on Fire Fighters and EMS Responders. Recovery from night calls and sleep deprivation is something you take home with you after each shift - it has its consequences. Sleep deprivation is a serious problem in the fire service that the Dorm Remotes help alleviate.*

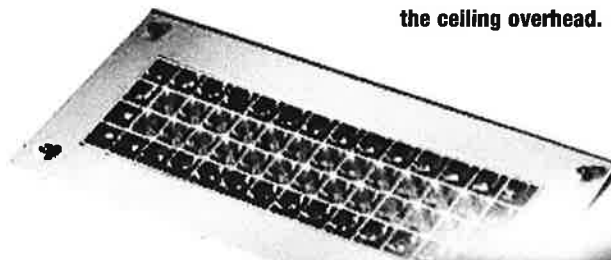


### **COMMONLY LOCATED IN:**

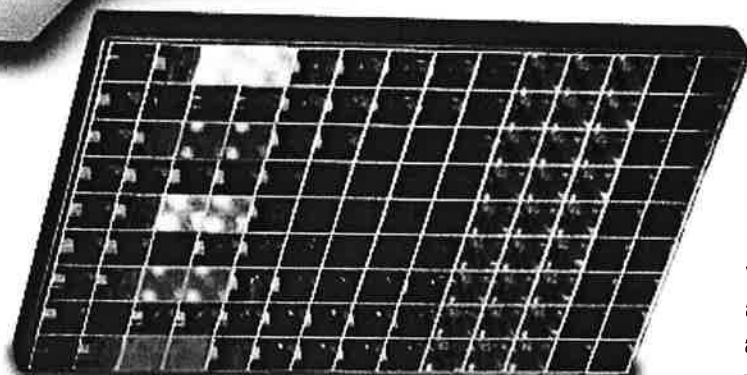
Individual/common  
bunk rooms, dormitories  
and offices.



Located next to each bed, the Dorm Remote can either be flush or surface mounted. The Dorm Remote Knight Vision Lighting module can be mounted on the Dorm Remote Unit or in the ceiling overhead.



# ALERTING MODULES



**Satelight Controllers and Satelights are mounted overhead in the ceiling.**

*Each company is assigned a specific color determined by the fire department.*

RESPONSE	LIGHT COLOR
Engine Company	RED
Truck Company	YELLOW
Hazmat or Specialty Unit	GREEN
Paramedics	BLUE
Battalion Chief	WHITE
All Units	ALL COLORS

## COMMONLY LOCATED IN:

Hallways, bathrooms, dayrooms, kitchens and common areas where alert audio is required.

## SATELLIGHT CONTROLLER® & SATELLIGHT®

The First-In Satelight Controllers® and Satelights® are installed throughout the fire station to perform the dual purpose of providing the alerting audio and visual notification of the call. When the station is alerted, the Satelight Controller verbalizes both the pre-announcement and dispatch audio. In addition, the Satelight Controller activates a company-specific colored light indicator. For example, when an alert comes in for paramedics, the Satelight Controller pre-announces "Medic Response" and the blue light indicator activates, visually signaling a Medic Response. With a simple glance at the Satelight Controller company indication lights, the crew knows immediately who is needed on the call. The necessary companies can begin responding instantly, reducing turnout time and overall response time.

An additional feature of Satelight Controllers & Satelights is Knight Vision Lighting. Firefighters were traditionally awakened with harsh, white lights when a night alarm sounds. Knight Vision Lighting provides a low intensity red glow, which gradually becomes brighter during the alarm sequence. Rather than waiting for their eyes to adjust to the bright lights, or risk injury from an inability to see clearly, Knight Vision Lighting allows sleepy firefighters to safely maneuver through the station and into the apparatus bays while preserving their night vision.

The Satelight Controllers and the Satelights function both as fire station alerting and public address speakers. Existing public address speakers can remain in place as a backup source of dispatch audio, or can be completely removed from the station.

## FIRST-IN ZONING

First-In Smart Station® Zoning is the concept of alerting areas of a fire station by company. Each company in the station is assigned a color associated with the rescue services it performs. For example, the truck company may be assigned the color yellow. When a truck company call comes in, Satelight Controllers emit the color yellow to indicate that the truck company is required on the call. The same is true for the remaining companies, such as the engine company with the color red, medics with the color blue, etc. Zoning is particularly helpful in stations with multiple companies.

## Satelight Controller & Satelight Features

- Colored Light Indicators for quick response
- Provides all dispatch and paging audio
- Ramped, Knight Vision red lighting
- Reduces optical stress during night alarms

**WITH A QUICK GLANCE AT THE SATELLIGHT CONTROLLER, THE CREW KNOWS IMMEDIATELY WHO IS NEEDED ON THE CALL.**

# ALERTING MODULES

## MESSENGERS™

The First-In Messengers visually display the alert information on Messenger alerting modules installed throughout the fire station. In addition to indicating the company assigned to the call, Messengers relay critical incident information, such as response level, address, hazardous materials data, medical conditions, highway detours or hydrant status.

### **Messenger Features**

- Provides instant call information
- Good in high-noise areas
- Available in Single Line, Four Line or Jumbo sizes for apparatus bays

WILDFIRE BR2

E2 E6 T2 R4 M2 M7  
TRAFFIC COLLISION - HEAVY RESCUE  
MAIN & 2ND

E2 T2 T9 R4 M2 M7  
STRUCTURAL COLLAPSE - HEAVY RESCUE  
MAIN & 2ND TRENCH

### COMMONLY LOCATED IN:

Apparatus bays, dayrooms,  
conference and training  
rooms, fitness rooms, hall-  
ways and egress areas.

## ALERTING STROBE™

### COMMONLY LOCATED IN:

Fitness rooms and work  
areas in apparatus bays.

The First-In Alerting Strobe provides a visual notification of an incoming alert. Two or four light units are installed within a room and flash when a call is received from dispatch. Simultaneously, the First-In Satellight Controllers will broadcast the dispatch audio and display what unit is needed on the call through the use of the colored light indicators.

The First-In Alerting Strobe helps insure that emergency personnel are alerted even when conditions are not optimal. This is especially beneficial in situations where personnel are using headphones while working out.



# ALERTING MODULES



## DYNAMIC AUDIO TECHNOLOGY™

Each fire station is unique. Fire station acoustics not only vary from station to station, but hour to hour. Factors such as environmental noise, building construction, room size and the number of occupants play a role in the ability to clearly hear a dispatch.

Westnet, Inc. engineers invented First-In Dynamic Audio Technology to accommodate fluctuating audio levels within the firehouse. When a call comes in, Smart Station alerting modules utilizing this ground-breaking technology measure room audio levels and automatically adjust their speaker volume so dispatch transmissions can clearly be heard.

### COMMONLY LOCATED IN:

Outside locations such as  
patios, workshops and  
training areas.



## OUTSIDE SATELLIGHT CONTROLLER®

The First-In Outside Satelight Controller provides alerting audio for outside areas. The Outside Satelight Controller consists of two devices, a weather resistant outside speaker and the intelligent controller, which is mounted indoors. The Outside Satelight Controller can be programmed to automatically lower its volume or shut off at night.



### COMMONLY LOCATED IN:

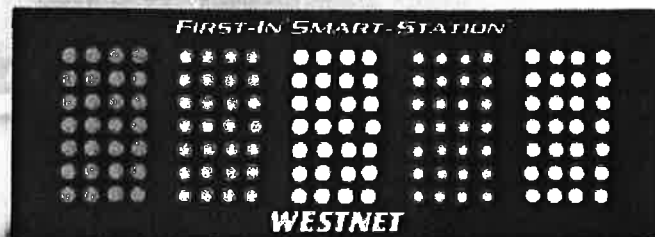
Apparatus bays, the front and  
back apparatus bay aprons,  
back yards and work areas.



## HIGH POWER AMPLIFIER™

The most difficult and problematic area of fire station audio is the apparatus bay. Westnet's highly successful solution to this problem is the First-In High Power Amplifier. Westnet's Dynamic Audio Technology alleviates the problem of missed calls due to inaudible dispatch transmissions in high-noise environments, such as stations located at airports, military bases and industrial areas. When station noise levels are high, the HPA automatically increases its speaker volume. Similarly, when station noise levels are low, the HPA softens its speaker volume, allowing personnel to comfortably hear the alert and dispatch audio.

### FIRST-IN SMART-STATION



WESTNET

## APPARATUS BAY COMPANY INDICATOR™

As a visual compliment to the High Power Amplifier, many fire departments use the Apparatus Bay Company Indicator to provide a visual notification of the companies needed on a call. Using the same color scheme as the Satelight Controllers, the Company Indicator notifies the crew of the apparatus assignment with just a glance at the large lights.



[www.FirstInAlerting.com](http://www.FirstInAlerting.com)



# ALERTING MODULES

## LOCAL ACTIVATION UNITS

The First-In Smart Station Alerting System includes a variety of Local Activation Units, including an Acknowledgment Switch, a Visitor Notification Doorbell, an Alert System Test Switch, an Emergency Switch, a Monitor Switch, a Speaker Switch and a Stove Reset Switch. When the Local Activation Units are activated, Smart Station alerting modules send an audio notification that is heard throughout the station via the Satelights, Dorm Remotes and HPAs. Additionally, a visual notification can be displayed on Dorm Remotes and Messengers. All messages can be customized to fire department specifications.

 <p><b>First-In Acknowledgment Switch</b></p> <p>The Acknowledgment Switch sends a signal back to dispatch confirming that the alert was received and the assigned crews are responding. The Acknowledgment Switch is commonly located in apparatus bays, where crews press it while on the way out of the fire station.</p>	 <p><b>First-In Visitor Notification Doorbell</b></p> <p>When a visitor activates a Doorbell, the announcement "Attention personnel, there is a visitor at the front door" is heard. In addition to the audio alert, a visual alert via the Satelights, Dorm Remotes and Messengers occurs. If there are multiple Doorbells, the system will announce and display at which door the visitor is located.</p>	 <p><b>First-In Alert System Test Switch</b></p> <p>The Alert System Test Switch allows fire personnel to conduct a full station test of the alerting system whenever desired. "This is a test of the First-In Alerting System, this is only a test" is heard throughout all Smart Station alerting modules. Additionally, all Satelights, Dorm Remotes, Messengers and Company Indicators illuminate and visually display a "System Test" message.</p>	 <p><b>First-In Emergency Switch</b></p> <p>The Emergency Switch announcement "Attention personnel, there is an in-house emergency, all personnel report" notifies the station crew of an in-station emergency. When the ES is pressed, all Smart Station audio and visual indicators (i.e. Satelights, Dorm Remotes, and HPAs) are activated and display "In-House Emergency". The system can be programmed to automatically notify dispatch of the incident. The Emergency Alert Switch is commonly located in watch rooms, station lobbies and apparatus bays.</p>
 <p><b>First-In Monitor Switch</b></p> <p>The Monitor Switch allows the station crew to monitor all radio traffic through the Smart Station audio units, such as Satelight Controllers, Satelights, Dorm Remotes and HPAs. If the crew does not wish to hear the radio traffic, they can simply turn the Monitor Switch to "off" and then they will only receive the calls for that station.</p>	 <p><b>First-In Speaker Switch</b></p> <p>The Speaker Switch is used to manually turn off the audio of a Satelight Controller and is commonly used in conference rooms, training rooms and administrative offices. The visual indicators on the Satelights continue to activate during an alert, so that emergency personnel know when an alert is received and who is going on the call. The Speaker Switch is also used to control outdoor speakers, which helps maintain good relations with neighbors adjacent to the fire station.</p>	 <p><b>First-In Stove Reset Switch</b></p> <p>During an alert sequence, the stove can be turned off to prevent accidental fire should the crews rush out on a call and forget to turn off the stove. When the crews return to the station, the Stove Reset Switch allows them to turn the stove back on.</p>	

# ALERTING MODULES

## KNIGHT LIGHT SYSTEM™

The First-In Knight Light System is an energy efficient, environmentally friendly dual mode lighting system. At a time designated by the fire department, the MCU automatically activates the Knight Light System each evening and places it into the "Non-Alert Mode". In the "Non-Alert Mode", the Knight Light illuminates dark hallways and stairwells with a white glow of light. Light sensors in the Knight Light System cause it to activate during the daytime hours if station lighting levels become low. If the station loses power, the Knight Light System will automatically activate and provide station lighting until the generator starts or normal power is restored. Unless otherwise programmed by the department, the MCU deactivates the Knight Light System the next morning.

### ENERGY EFFICIENCY

All First-In Fire Station Alerting System visual indicators utilize Light Emitting Diodes (LED) for illumination. LED devices are low voltage and draw very little electricity, making these units extremely energy efficient. LEDs have a long lifetime, averaging 4 million alerts or 100,000 hours of lighting. The First-In Fire Station Alerting System has been engineered to achieve the highest levels of energy efficient standards and Westnet, Inc. continues to work towards manufacturing green and environmentally friendly units.

## NON-ALERT MODE



# ALERTING MODULES

## KNIGHT LIGHTING™

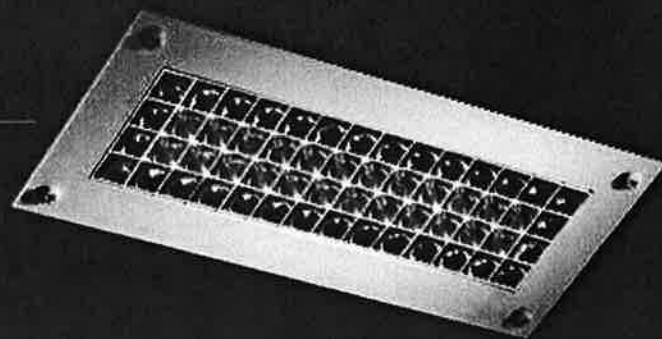
When a station is alerted, the Knight Light System enters "Alert Mode". In the "Alert Mode", the white glow of lights switches to red Knight Vision Lighting. The station lighting system remains red until the end of the alert. This feature is especially helpful during night calls, as it preserves the firefighter's night vision and provides safe entry into egress areas and apparatus bays. At the end of the "Alert Mode", the Knight Light System switches back to white.

## ACTIVE X-IT LIGHTING®

First-In Active X-It Lighting visually aids the crew during an alert by emitting a moving, directional glow of red light indicating exits leading to the apparatus bay and pole holes. Active X-It, rather than the Knight Light System, is used in areas where continuous lighting is not needed throughout the night (i.e. open dormitories).

## ALERT MODE

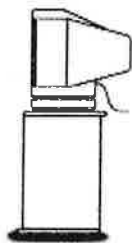
The Knight Light System eliminates the optical shock of glaring fluorescent lights when personnel enter a hallway or stairwell.





# ALERTING MODULES

**Silencer**



## CONTROL REMOTE®

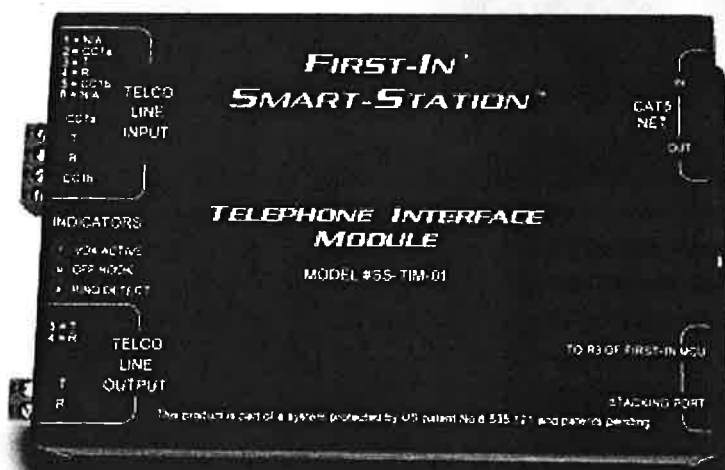
The First-In Control Remote is used to perform a wide variety of tasks throughout the fire station by using relays to interface other station systems into the alerting system. The Control Remote is commonly used as a safety tool to automatically turn off stoves and barbeques, thus reducing the risk of fire when crews rush out on a call. Control Remotes are capable of sensing unsafe conditions within the fire station and can report these situations to fire personnel, the dispatch center and Westnet's C3 Center. For fire stations not implementing Smart Station audio and lighting modules, the Control Remote is used to activate a station's existing lighting and public address systems.

### Control Remote Features

- Turns off kitchen appliances and barbeques
- Opens apparatus bay doors
- Activates exhaust fans
- Controls traffic lights
- Opens station security gates

## SILENCER®

The First-In Silencer automatically mutes infrared-controlled entertainment devices (i.e. televisions and stereos) during an alarm sequence, allowing for quiet and clear audio recognition of the incoming dispatch. The Silencer is frequently used in high-noise areas, such as fitness rooms, dayrooms, dining rooms and kitchens. Once the alert is complete, the Silencer automatically restores the stereo and television equipment back to their prior audio settings. The Silencer can be used in conjunction with the Video Messenger.



## TELEPHONE INTERFACE MODULE™

The First-In Telephone Interface Module (TIM) is used for paging personnel within the fire station. The TIM eliminates the need for a traditional public address system by integrating the fire station telephone system into the First-In Alerting System. Intercom paging is heard throughout the station through the Smart Station audio units, such as Satelight Controllers, Dorm Remotes, HPAs and outside speakers.

# ALERTING MODULES

## POWER MODULE™

The First-In Smart Station Power Module provides the necessary power to all First-In Smart Station alerting modules. Power Modules are located throughout the station, providing distributed power for the alerting system. These intelligent Power Modules are capable of sensing a loss of power. Once a loss or interruption of power is sensed, the alerting system notifies the station crew. The Power Modules can be programmed to notify dispatch, as well as Westnet's C3 Center. All Power Modules come equipped with an external on-line, uninterruptible power supply (UPS).



## UPS

All First-In Fire Station Alerting Systems include a minimum of one Uninterruptible Power Supply (UPS). The UPS provides continuous power in the event of power loss to the fire station, allowing alarm sequences to continue to be received. The UPS also provides line filtering, protecting alerting equipment from power surges or spikes.

## CABLE PLANT

All First-In Smart Station Systems include a First-In Cable Plant, which is a pre-fabricated Ethernet LAN Cabling System. Each low voltage cable system has been inspected and tested by Westnet, Inc. The First-In Smart Station alerting modules communicate with each other utilizing Ethernet LAN cabling throughout the entire system. The First-In Cable Plant allows for ease of installation, expandability, multiple configuration options and quick troubleshooting.

## RADIO ISOLATION UNIT™

The First-In Radio Isolation Unit is used to protect the MCU from damage occurring from unforeseen electrical transients and lightning strikes. The Radio Isolation Unit is located between the MCU and the fire station radio. If the radio antenna receives a lightning strike, the Radio Isolation Unit filters damaging electrical surges, minimizing or preventing harm to the MCU. Multiple radios can be connected to the Radio Isolation Unit.



## DATA LINE SURGE PROTECTOR

Westnet, Inc. utilizes a Data Line Surge Protector to protect the alerting system from data line surges.

# SAMPLE STATION



## FIRST-IN FIRE STATION ALERTING

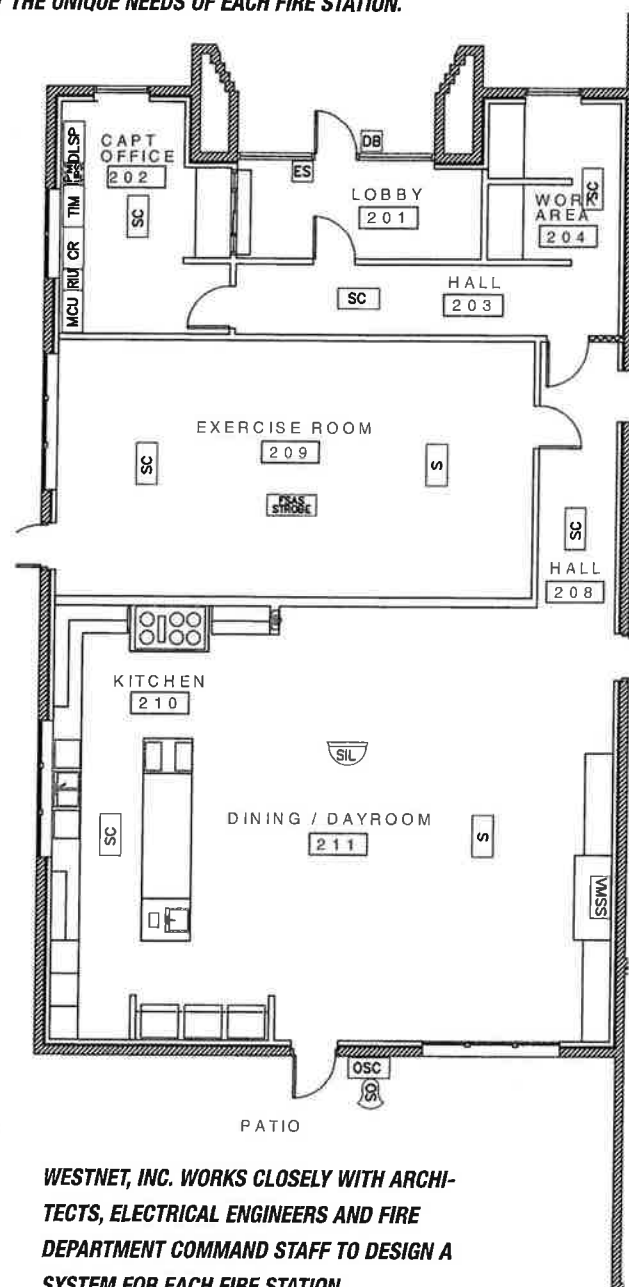
### LEGEND

<b>MCU</b>	Master Control Unit
<b>PAG</b>	Station Paging Module
<b>CR</b>	Control Remote
<b>RIU</b>	Radio Isolation Unit
<b>PM UPS</b>	Power Module & UPS - REQUIRES 110V. POWER
<b>AUX</b>	Auxiliary Module
<b>SC</b>	Satellite Controller
<b>S</b>	Satellite
<b>SSAP</b>	Smart Station Amplifier
<b>PAS</b>	PA Speaker
<b>PASL</b>	PA Speaker with Lights
<b>FSAS STROBE</b>	Alert System Strobe Controller
<b>FSSL</b>	FSAS Strobe Light
<b>DR</b>	Dorm Remote
<b>DL</b>	Dorm Light
<b>SIL</b>	Silencer
<b>VMSS</b>	Video Messenger
<b>BAY</b>	Apparatus Bay Satellite Indicator
<b>HPA</b>	High-Power Paging Amplifier & Speaker
<b>DUAL HPA</b>	High-Power Paging Amplifier & Dual Speakers
<b>SMSS</b>	Single Line Messenger - REQUIRES 110V. POWER
<b>JMSS</b>	Jumbo Messenger - REQUIRES 110V. POWER
<b>OSC</b>	Outside Satellite Controller
<b>OS</b>	Outside Speaker - IN CONJUNCTION WITH <b>OSC</b>
<b>A-XT</b>	Active-X-IT Lighting
<b>KL</b>	Knight Light
<b>DB</b>	Doorbell
<b>ES</b>	Emergency Switch
<b>SW</b>	Speaker Switch
<b>MNI</b>	Radio Monitor Switch
<b>AS</b>	Acknowledgment Switch
<b>TS</b>	Test Switch
<b>CI</b>	Company Indicator
<b>TT</b>	Turnout Timer

[www.FirstInAlerting.com](http://www.FirstInAlerting.com)

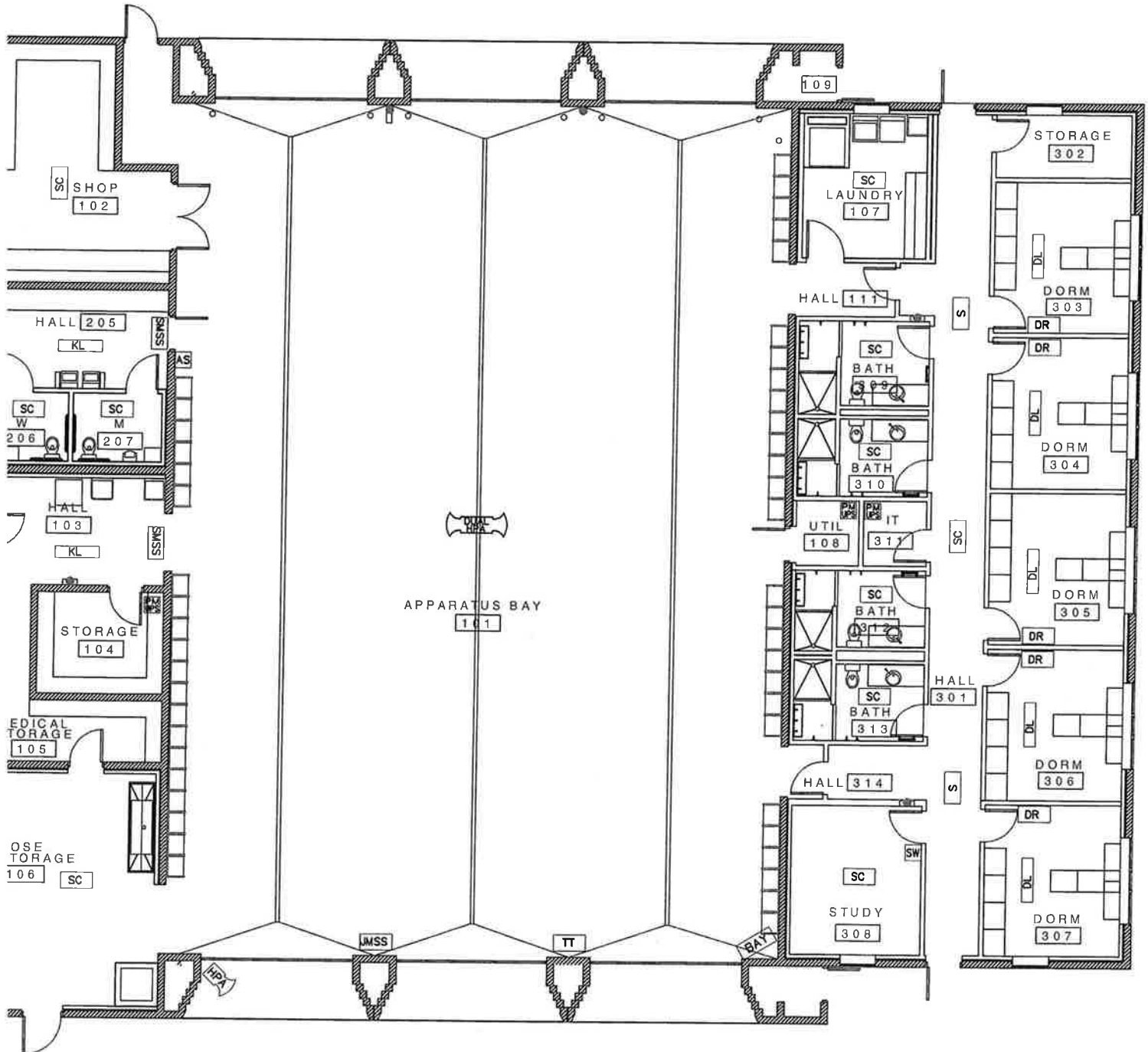
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(800) 807-1700

**THIS FLOOR PLAN DEPICTS HOW FIRST-IN FIRE STATION ALERTING EQUIPMENT CAN BE PLACED THROUGHOUT A FIRE STATION. FIRST-IN'S MODULAR DESIGN ALLOWS THE CUSTOMER TO IMPLEMENT AN ALERTING SYSTEM TAILORED TO MEET THE UNIQUE NEEDS OF EACH FIRE STATION.**



**WESTNET, INC. WORKS CLOSELY WITH ARCHITECTS, ELECTRICAL ENGINEERS AND FIRE DEPARTMENT COMMAND STAFF TO DESIGN A SYSTEM FOR EACH FIRE STATION.**

**FOR THOSE DEPARTMENTS UTILIZING EXISTING STATION PUBLIC ADDRESS SYSTEMS, THE FIRST-IN "CORE PACKAGE" WILL CONSIST OF A MASTER CONTROL UNIT, CONTROL REMOTE, RADIO ISOLATION UNIT, DATA LINE SURGE PROTECTOR AND A UPS. THESE ALERTING MODULES CAN BE INTEGRATED WITH YOUR CURRENT STATION LIGHTS AND PUBLIC ADDRESS SYSTEM.**



# DISPATCH & NOTIFICATION SYSTEMS

## WHERE IT ALL BEGINS

*If there is one vital element in the life of an emergency, it is the point at which a call is received at the dispatch center. In what could be the worst possible moment in a person's life, they reach for a phone and dial 911. Everything they need to save themselves or their loved ones depends on the actions of the emergency dispatcher, who puts into motion a series of events that sends the much needed help. The critical incident information they collect allows EMS and fire crews to begin taking the actions required for rescue and response. That calming influence on the other end of a desperate phone call is the voice of an unseen hero, the hero that is part of a team that works to save lives and property. In essence, dispatch is where it all begins.*

*In order to alert the first responders of an emergency in the fastest way possible, both the dispatch center and the fire station must be equipped with technology that allows for rapid transfer of the call information. Westnet, Inc. has designed a suite of products used in dispatch centers to assist communications managers in meeting their operational goals for a consolidated, turnkey product for alerting first responders of emergency situations. The First-In Alerting Platform provides a comprehensive framework for alerting emergency personnel.*

### DISPATCH INTERFACE

The First-In Fire Station Alerting System has been credited with dramatically reducing response time. A key factor in reducing response time is the way in which dispatch activates the alerting system. First-In can be activated in a number of ways (i.e. IP network, analog and digital radio systems, serial data, etc). While First-In offers an optional suite of dispatch products for enhanced dispatch capability, First-In does not require any equipment in the dispatch center.

### AUTOMATIC CAD INTERFACE

Using a two-tone system on a multiple station call can easily delay the dispatch by several seconds, wasting precious time. When used in conjunction with the dispatch center's Computer Aided Dispatch (CAD) and network systems, the First-In System virtually eliminates this delay. Several stations can be activated at once instead of one at a time. The automatic CAD interface allows crews to respond faster.

Another benefit of a direct interface between the dispatch CAD and First-In is automatic failover. The CAD and First-In Alerting Systems are in con-

stant communication with one another and First-In automatically acknowledges every alert back to CAD. If the CAD does not receive the proper acknowledgment, the CAD automatically activates First-In over the backup system. This automatic failover to a secondary activation method occurs without any delay or action required by the dispatcher.

The First-In Fire Station Alerting Systems interface with most commercial CAD systems, as well as many local systems that were created "in house" by department, city or county personnel.





# ALERTING FRAMEWORK

## OPTIONAL DISPATCH SOLUTIONS

### FIRST-IN ALERTING & NOTIFICATION FRAMEWORK

IP - BASED FIRE STATION ALERTING

VOIP DISPATCH

MOBILE NOTIFICATION SYSTEM

FIRST-IN AUTOMATED VOICE DISPATCH

PAGER NOTIFICATION

TEXT / SMS NOTIFICATION

EMAIL NOTIFICATION

PRINTER NOTIFICATION

RADIO INTERFACE CONTROLLER

### FIRST-IN ALERTING PLATFORM™

The First-In Alerting Platform (FIAP) is a computer-based framework that provides dispatch with a variety of automatic and manual alerting options. The FIAP utilizes network alerting (IP), as well as radio, paging, text /SMS message and email messages to alert first responders both in and out of the station.

Information sent via the FIAP contains the units needed on the call, the incident type, the response level, address and other call details.

This information is voiced and displayed at the fire station, transmitted over the fire radio system and can be sent to pagers and cellular phones as text and email messages.

The First-In Alerting Platform offers many levels of redundant alerting, which enables the dispatch center to alert first responders in the event of a primary alerting method failure.

### FIRST-IN VOIP DISPATCH™

The First-In VoIP Dispatch System uses VoIP technology to send dispatch audio to the alerted fire stations. This system is used as a redundant path of the dispatch audio on the fire radio system. VoIP enables silent alerting of the fire station without broadcasting the information over the fire radio system. The VoIP data is encrypted to

prevent unauthorized reception of the information. The First-In VoIP Dispatch System is supervised to meet NFPA 1221 recommendations of supervised alerting circuits and offers both a high level of operational reliability, as well as a secure audio path to the fire stations.

### FIRST-IN MOBILE NOTIFICATION SYSTEM™

The First-In Mobile Notification System (FIMNS) enables the dispatch center to verify that alerted first responders are responding to the dispatch. The alerted personnel confirm that they are en route by auto-dialing the FIMNS from their smart phones with the number embedded in the email message sent to their pager or cellular

phone. Response verification is automatically displayed on monitors in the dispatch center, as well as to the CAD system.

# AUTOMATED VOICE DISPATCH



## FIRST-IN AUTOMATED VOICE DISPATCH SYSTEM™

The First-In Automated Voice Dispatch (FIAVD) feature of the First-In Fire Station Alerting System provides the fire/rescue department and the dispatch center a quick, consistent means of providing complete dispatch information to the responding emergency personnel. This component of First-In offers the most comprehensive, turnkey public safety dispatch notification currently available. The FIAVD decreases dispatch center stress by reducing the amount of time a dispatcher is needed on the 911 call. Once the dispatcher obtains and approves all of the pertinent call information, the CAD sends information to the FIAVD and the FIAVD automatically announces the call information to the appropriate first responders. This call information includes, but is not limited to, the units assigned to the call, the nature of emergency, the incident address or name of the business and more. The automation of the FIAVD alleviates the need for the dispatcher to voice the call information, thus allowing him or her to concentrate on incoming emergency calls and supervise existing calls. This feature not only reduces response time, but helps reduce stress when call volumes are high and dispatchers are handling numerous 911 calls at the same time.

The FIAVD integrates seamlessly with the First-In Fire Station Alerting System station equipment, providing automated voice that completes the entire dispatch message. Administrative management of FIAVD can be done by dispatch center personnel utilizing voice management software that is capable of customizing the speech, cadence, pronunciation and accent of words in the database. The FIAVD Voice Editor is specifically designed for use by dispatch and fire communications personnel and does not require expensive, time consuming creation and editing of .wav files.

### **FIAVD Features**

- Reduces dispatcher stress levels
- End-user voice editing software
- Helps with high call volumes in the dispatch center



# ALERT NOTIFICATION

*The First-In Alerting Platform provides users with a multitude of alerting notification methods outside of the fire station. Alerts and notifications are sent to first responder pagers, cell phones, and email accounts. The First-In Alerting Platform allows dispatch to designate which personnel receive the alerts. For example, the Battalion Chief's cell phone is not alerted for basic medical aid calls, but is for a commercial structure fire.*

## FIRST-IN PAGER NOTIFICATION™

The First-In Alerting Platform supports analog and digital, simulcast wide-area paging of first responders. Emergency personnel will receive the call information, such as units needed on the call, incident type, address of the incident and any additional call information on their alphanumeric pagers. The use of pager notification is ideal for career, volunteer and combination departments that need alert notification of personnel in the field. The pager message contains the information necessary to utilize the First-In Mobile Notification System.



## FIRST-IN TEXT / SMS MESSAGE NOTIFICATION™

The First-In Alerting Platform supports the ability to send dispatch information as a text message to the first responder's cellular phone, regardless of the wireless carrier. Emergency personnel receive a text or SMS message with the call information. Responding personnel can acknowledge with a response by using the First-In Mobile Notification System, which enables the dispatch center to confirm that personnel are responding to the incident. The use of text message notification is ideal for career, volunteer and combination departments that need alert notification of personnel in the field.



## FIRST-IN EMAIL MESSAGE NOTIFICATION™

Similar to the Text Message Notification, the First-In Alerting Platform supports the ability to send dispatch information as an email message to the first responder's smart phone. The email contains the call information, such as units assigned to the call, incident type, address and any additional call information on their cellular phone. Responding personnel can acknowledge their response by using the First-In Mobile Notification System, enabling the dispatch center to confirm that personnel are responding to the incident. The use of email message notification is ideal for career, volunteer and combination departments that need alert notification of personnel in the field.

FileEditemailInboxOutbox

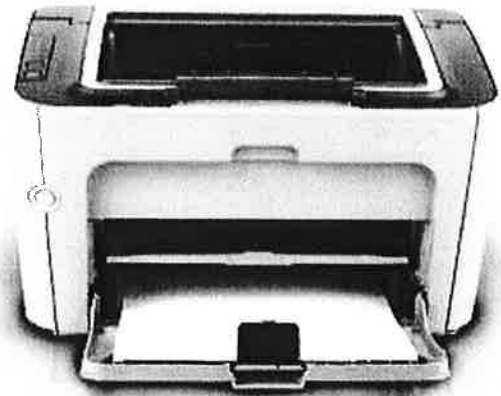


# ALERT NOTIFICATION



## FIRST-IN RADIO INTERFACE CONTROLLER™

The First-In Radio Interface Controller System (RIC) provides both automatic and manual activation of the fire station using wireless radio technology. Alert information is automatically sent from the CAD system or the First-In Alerting Platform to the RIC, which transmits the information to the MCU. In the event the dispatch computer or network is down, the dispatcher uses the RIC's keypad to manually alert the station. Even in the manual backup mode, the RIC provides station and company-specific alerting. The RIC System operates on both analog and digital radio systems, as well as the new P25 radio system.



## PRINTER NOTIFICATION

The First-In Alerting Platform supports the ability to send dispatch information to station printers, as well as mobile printers using a wireless network. Before exiting the station, emergency personnel receive a printout of the call information (i.e. units assigned to the call, incident type, address, and any additional call information).

## NFPA 1221, 1710 & 1720

The First-In Fire Station Alerting System assists departments in meeting the recommendations of NFPA 1221. The First-In MCU accomplishes this through the use of polling when utilizing IP, serial data, or radio frequency (RF) to alert the station. Polling provides instant notification of a lost connection between dispatch and the fire station, which greatly reduces the chance of a missed call. The CAD checks its connection with the fire station's MCU at a predetermined variable, such as every 10.5 seconds. If the CAD does not receive proper confirmation from the MCU, the alerting system announces the loss of connection to the station crew. This feature enables the crew, dispatch, fire and communications personnel to begin proactive, rather than reactive, correction of the problem.

First-In also assists fire departments striving to meet NFPA 1710 and 1720 recommendations for response time. The pre-announcement and Smart Station alerting modules help departments reduce response time and arrive on scene faster. The elapsed alert time displayed by the Turnout Timers helps crews towards meeting response time goals.



# AIRPORT ALERTING

## FIRST-IN AIRCRAFT EMERGENCY SYSTEM™ MILITARY & CIVILIAN

Anytime an aviation emergency occurs, lack of immediate and accurate information increases the chance for loss of life. Where is the aircraft? What is the emergency? How many souls are on board? How many pounds of fuel are remaining? Answers to these questions become the critical incident information necessary to perform the quickest and safest rescue. Responding to the crash site quickly enables the ARFF crew to secure escape paths, evacuate the aircraft and extinguish burning debris as swiftly as possible. Time is paramount. The First-In Aircraft Emergency System is used in airports to reduce response time and expedite the flow of information during an aircraft emergency.

**WESTNET, INC. OFFERS A COMPLETE SUITE OF AIRCRAFT EMERGENCY ACTIVATION AND ALERTING SYSTEMS.**



## FIRST-IN CRASH PHONE MODULE™

When the Air Traffic Controller picks up the crash phone to alert the ARFF station, the MCU and First-In Crash Phone Module automatically answer the station crash phone. After answering the crash phone, the MCU and Crash Phone Module emit a ringing tone throughout the station. The crash phone audio is then played throughout the Smart Station alerting modules allowing all crew members to hear the dispatch information while suiting up.



Due to the unique environment of both civilian and military airport crash stations, the First-In High Power Amplifier is frequently used to broadcast alerts over the loud noise that jet engines can cause. The First-In Alerting Strobe and Jumbo Messengers are also used to indicate an incoming alert and provide critical incident information.



# INSTALLATION & SERVICE



WESTNET SERVICE VEHICLES

## SMART STATION (RAAM) SOFTWARE™

First-In Smart Station RAAM is an optional software suite that enables the customer to remotely administer the alerting system for all stations. RAAM provides immediate access via Ethernet LAN to each station from a central location, such as the department's communications facility or fire headquarters. This feature eliminates costly and time-consuming trips to the individual fire stations throughout the city or county for normal service calls.



## INSTALLATION

The First-In Fire Station Alerting System can be installed in new, existing or remodeled fire stations. All First-In Smart Station Alerting Systems include the First-In Cable Plant and mounting hardware. Westnet has a network of certified, national installation companies who provide turnkey installation including on-site, end-user training.

## EXTENDED WARRANTIES AND MAINTENANCE OPTIONS

Each Westnet product is backed by a one-year parts and labor warranty. On-site warranties, extended warranties and maintenance plans are also available. Westnet will tailor a Customer Care Plan to fit your department's needs with packages ranging from remote technical support to full on-site maintenance.

## TECHNICAL SUPPORT

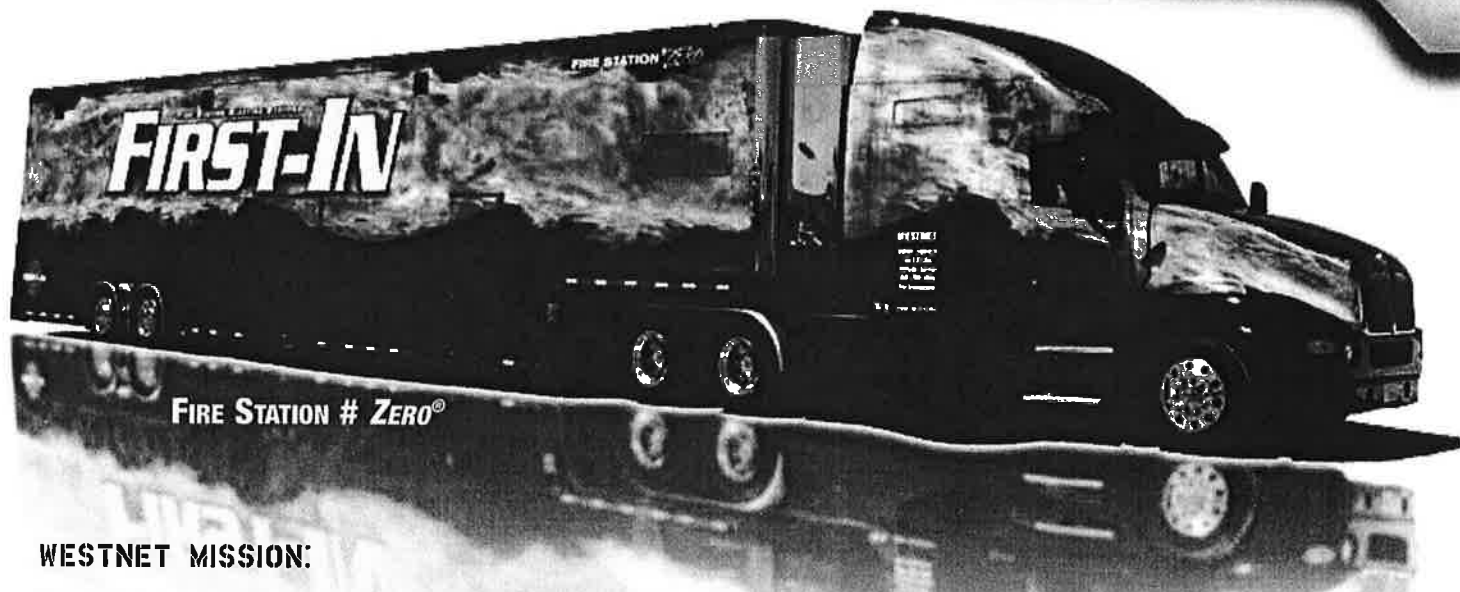
We realize that the job of public safety officials is not 8 to 5. Technical support is available from Westnet's C3 Center, whereby the Westnet Systems Group can directly access a station's alerting system via a VPN connection. This customer service provides a collaborative effort between Westnet and department personnel in order to quickly resolve any issues on a 24-hour a day, 7-day per week basis. Westnet, Inc. also maintains a 24-hour dispatch center for immediate assistance.

### **Copyright Notice and Disclaimer:**

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# OUR COMMITMENT



## WESTNET MISSION:

Westnet, Inc. is dedicated to increasing the efficiency and safety of the first responders serving our communities. We are devoted to improving the quality of life not only for the men and women of the fire and military service, but the citizens who rely upon you in times of need. Our goal is to continuously exceed client expectations on every level. Creativity and innovative engineering drive us to produce breakthrough technology in the field of emergency communications.

Westnet, Inc. has been providing the fire service with high quality communication products and consulting for over 25 years. We pride ourselves on building excellent products that public safety

personnel can rely upon. Manufacturing first-rate, dependable equipment that lasts has created a strong following of clients who continue to purchase additions to their alerting systems with each passing year. These clients know that Westnet, Inc. stands behind its products. Our reputation is solid and our dedication to the fire service is rooted in respect, as well as a long-term commitment to excellence.

First-In is built by people who understand and respect the fire service. They are dedicated to assisting you perform your duties and helping you go home to your families at the end of your shift.

## WESTNET QUALITY ASSURANCE

All First-In Fire Station Alerting Systems are proudly made in the United States of America. Stringent quality control standards are applied to all equipment we manufacture and every product must pass Westnet Integration Laboratory Inspections and Engineering Qualifications. All First-In alerting modules are tested with a minimum of 1,000 successful alerts prior to delivery and installation. Extremely high reliability is a hallmark of Westnet's First-In Fire Station Alerting System.

**WHEN LIVES HANG IN THE  
BALANCE, COMPROMISE  
IS NOT AN OPTION.**

**COURAGE**

**TRADITION**

**DETERMINATION**

**TEAMWORK**



**LOYALTY**

**HONOR**

**DEDICATION**

**SERVICE**



**WESTNET®**

**PROUDLY MADE IN THE USA**

**PHONE (800) 807-1700**

**FAX (714) 901-5610**

**WWW.FIRSTINALERTING.COM**

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Friday, September 07, 2012



## *Air Force Best Practice*

---

1. POC's Name<sup>1</sup>: MR LINC WEINRICH
2. POC's Phone Number: 314-742-2262
3. Name of the Process<sup>2</sup>: COLUMBUS AIR FORCE BASE EMERGENCY CONTROL CENTER BENCHMARKS
4. Name of Best Practice<sup>3</sup>: BRINGING 21<sup>ST</sup> CENTURY EMERGENCY DISPATCHING TO FIRE EMERGENCY SERVICES
5. Date Best Practice was Implemented: 1 AUGUST 2007
6. Process Owner<sup>4</sup>: 14 CES/CEF
7. Process Owner's (or Representative's) Phone Number: DSN: 742-2262 / COMM 662-434-2262
8. Organization & Address (include zip code): 14 CES/CEF/998 INDEPENDENCE AVE/COLUMBUS AFB/MS 39710-6201
9. Unit E-mail Address of Process Owner: [linc.weinrich@columbus.af.mil](mailto:linc.weinrich@columbus.af.mil)
10. Summarize the Best Practice (*how it works; how you measure it*).<sup>5</sup>:

CAFB Fire Emergency Services obtained compatible software for Emergency Control Center (ECC) to tie into ATT Global Positioning System grid coordinates. ECC now possesses capability to track 911 hard line telephone or cell phone calls to exact room number of any bldg on base and ability to triangulate any cell phone within 10 feet anywhere in base area. System is also compatible with base master telephone listing which enables Communications squadron to update system when telephone maintenance changes or moves numbers around. One of very few, if not the only Air Force ECC System in compliance with Federal Communications Commission phase II mandate.

CAFB ECC incorporated leading-edge technology by phasing in cutting edge First-In Fire Station Alerting Systems into ECC dispatching. Department reduced critical dispatching time by 2 minutes because Firefighters are able to respond with visual intellect of response location and general information associated with emergency before dispatchers finish specific processing information. Built in video messenger system takes control of every TV in the department and shows the alert with the emergency address over screen. Jumbo messengers are located throughout apparatus bay to display building pre-fire plan graphics, and ability to zoom down to building and show address of emergency location.

First-in Zoning and Knight Vision Lighting with Dorm Remote technology is installed throughout the department. First-in Zoning allows for associating response crews with various light colors for the type of response needed. With this system crews know immediately who is needed on particular responses. Knight Vision Lighting with Dorm Remote allows each crew member the capability to program their dorm remote according to assignment. LED lighting is aligned throughout sleeping corridors. Lights are constant in that they operate in regular clear daytime mode and read emergency alert mode turning corridors and rooms red. Teleprompter displays and voice recorder notifies firefighters of response vehicles for selected response.

ECC systems are compatible with AFSO-21 initiative to consolidate Security Forces law enforcement desk with ECC. Inter-compatibility allows tie in of various Infrared video surveillance cameras projecting across base to allow for instant on-scene visual. ECC possess cross-flow of information ability from two dispatch work areas with



100% redundant capabilities. System is designed to function with one mouse, one keyboard and one headset to prevent confusion of which key board belongs to which system. Monaco Mass notification client also possesses capability to update Emergency Operations Center and Command Post to create continuity between agencies.

11. Describe the *impact* on process/organizational performance (*results!*)<sup>6</sup>:

Imitative improved the safety of base occupants during all emergency situations. CAFB Fire Emergency Services is better able to meet current Air Force aggregate response times. Firefighters now awake with soft human voice pre-announcement and a red glow of light to help reduce stress associated with the unnecessary loud tones to alert firefighters of a response.

12. Describe how this practice was qualified as being a "best" practice<sup>7</sup>:

ECC communication systems are in compliance with Federal Communications Commission phase II mandate. LED lights significantly reduce energy costs. Pre-announcement is critical to the successful execution of every emergency call. Reducing firefighter stress level was a primary concern because years of shocking alarms and bright lights in the middle of the night takes its toll on the human body.



### MILITARY INSTALLATIONS

- Buckley Air Force Base Colorado
- Columbus Air Force Base Mississippi
- Dyess Air Force Base Texas
- Fort Carson Colorado
- Fort Myer Virginia
- Little Rock Air Force Base Arkansas
- Newport Naval Station Rhode Island
- Elmendorf Air Force Base Alaska
- Barnes Air National Guard Maine

### **\*\*\*Scheduled 2011 Installations**

- Fort Belvoir Virginia
- Maryland ANG Maryland
- NIST Maryland
- Eglin Air Force Base Florida



## APPENDIX KK

### ELECTRONIC SECURITY SYSTEMS UPGRADES

This appendix is provided along with the solicitation documents as a separate PDF document labeled “Appendix\_KK.pdf”

APPENDIX LL  
FORT POLK INSTALLATION SOP'S

APPENDIX LL  
Ft Polk Installation SOP's

- Installation Access
- Photos
- Temporary Utility Meters
- Marking Utility Locations & Dig Permit Request
- Pretreatment of Termites
- Modifying Water/Wastewater Systems
- Cross Connection Information
- Army Policy of Waste Management for New Construction
- Hazardous Waste Management Plan

## Privacy Act Statements for Rosters

### Access Control Rosters

In Accordance with Title 5, U.S.C. § 552a (Privacy Act of 1974) as implemented by the Federal Register, Department of Defense, Department of the Army, 32 CFR Part 505, The Army Privacy Program; Final Rule, protected personal information will not be disclosed from this roster to any commercial enterprise or representative thereof or to any individual outside the Department of Defense. This roster will be safeguarded IAW paragraph § 505.2, of the Federal Register named above. When updated, obsolete copies will be destroyed as required by paragraph 4-501, AR 25-55, The Department of the Army Freedom of information Act Program.

In Accordance with Title 5, U.S.C. § 552a (Privacy Act of 1974) as implemented by the Federal Register, Department of Defense, Department of the Army, 32 CFR Part 505, The Army Privacy Program; Final Rule, protected personal information will not be disclosed from this roster to any individual outside the Department of Defense except to **Law Enforcement and Access Control / Security Personnel**. As to the preceding, excepted individual and organizations, consent to disclosure is expressly given by personnel listed below. This roster will be safeguarded IAW paragraph § 505.2, of the Federal Register named above. When updated, obsolete copies will be destroyed as required by paragraph 4-501, AR 25-55, The Department of the Army Freedom of information Act Program.

In Accordance with Title 5, U.S.C. § 552a (Privacy Act of 1974) as implemented by the Federal Register, Department of Defense, Department of the Army, 32 CFR Part 505, The Army Privacy Program; Final Rule, protected personal information **SSN, Drivers Licenses Numbers, dates of birth and personnel phone numbers** will not be disclosed from this roster to anyone outside the Department of Defense. This alert roster will be kept in a secure place at all times. When updated, obsolete copies will be destroyed as required by paragraph 4-501, AR 25-55, The Department of the Army Freedom of information Act Program.

**NOTE:** All Fort Polk, documents containing Privacy Act Data are to be considered FOUO and should be destroyed as outlined below:

**Paragraph 4-501, AR 25-55 states:** Non-record copies of FOUO materials may be destroyed by tearing (or shredding) each copy into pieces to preclude reconstructing, and placing them in regular trash containers. All electronic forms of Privacy Act Data will be safe guarded by CAC enabled computers and will only be processes by authorized users on government systems.

## Access Control Roster

All information must be provided in order to be added to the installation access control roster. **Complete SSN, Drivers License Number, Date of Birth** must be provided in order to positively identify authorized patrons of Fort Polk. Enclave Start and Ends Dates must also be provided. Failure to comply with these instructions will result in denial of access to the installation under this program. See attached Privacy Act Statement. **Access control rosters must be submitted from a .mil, .af, .navy, .acoe or other DoD address in order to be accepted. Any roster submitted by a commercial ISP (example @yahoo.com, @gmail.com, etc will not be accepted.**

[illegible]

REPLY TO  
ATTENTION OF:

IMSW-POL-ZA

DEPARTMENT OF THE ARMY  
US ARMY INSTALLATION MANAGEMENT COMMAND  
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT POLK  
6661 WARRIOR TRAIL, BUILDING 360  
FORT POLK, LOUISIANA 71459-5339

OCT 12 2006

## MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Garrison Policy Memorandum #6 – Photographs on the Installation

## 1. REFERENCES:

- a. AR 360-1, The Army Public Affairs Program, 15 September 2000.
- b. AR 190-13, The Army Physical Security Program, 30 September 1993.
- c. AR 525-13, Antiterrorism, 4 January 2002.
- d. AR 380-5, DA Information Security Program, 29 September 2000.
- e. Message, VCSA, Subject: (U) Sensitive Photos (U//FOUO), DTG: 141637Z Feb 05.

2. PURPOSE. To outline uniform procedures for requests to take photographs, sketches, drawings, maps, or geographical representations of the JRTC and Fort Polk military installation or equipment.

3. APPLICABILITY. This policy applies to all military, civilian, government civilians, and contractors within the JRTC and Fort Polk installation.

4. PROCEDURES. Per USC Title 18 and in the interest of National Defense, it is unlawful to make any photograph, sketch, picture, drawing, map, or geographical representation of a military installation or equipment without first obtaining permission of the commanding officer or his representative. The following procedures will be followed to request authorization to do so:

a. Media and Public Affairs Photography. Requests in this category must have prior approval of the JRTC and Fort Polk Public Affairs Office (PAO). Personnel requesting the taking of these type photographs will be escorted and regulated by PAO. PAO personnel will not normally be restricted from photography for PAO purposes, but access will not be allowed in restricted/forbidden, classified, or highly sensitive areas.

b. Official Photography. Requests for official photography, to include DA Official Photos, Chain of Commands, and field photography, will be scheduled through the Visual Information Branch of DOIM. These photographs are accomplished by the government services contractor with government Visual Information Manager oversight and will be reviewed by PAO for public

IMSW-POL-ZA

SUBJECT: Garrison Policy Memorandum #6 – Photographs on the Installation

release and submission to DA for archival purposes. All photos and digital files will be marked "For Official Use Only" prior to release to the requesting agency.

c. Contractor Photography. This category must have prior approval of the Security and Intelligence Division (S&ID), DPTMS, Force Protection/Antiterrorism (FP/AT) cell, and the Provost Marshal Force Protection Office. This photography is accomplished by contractors working for the government and the approval will be the responsibility of the Directorate/Agency that has the contract requirement. Government Quality Assurance personnel and CORs do not require prior approval. These personnel take photographs for use in documenting observations during inspections of contractors work. Personnel taking photographs or video in support of the Mission Support Contract (MSC) do not require prior approval. These personnel take photographs and video in direct support of JRTC rotations which is coordinated through the Operations Group S3.

d. Soldier/Family member Photography. Requests for photos in a unit area or of a unit activity must be coordinated with the unit S2 for approval. Requests for photos elsewhere on the installation, other than family housing areas or within a Soldier's billets, must be coordinated with PAO for approval.

e. General public requests to photograph specific areas on the installation must be approved by PAO and coordinated with S&ID, DPTMS, the FP/AT cell, and the Provost Marshal Force Protection Office. Photography of approved installation public events such as ceremonies, special events and festivities, does not require prior approval.

f. Law enforcement officials have the authority to seize photographic or other equipment from individuals suspected of using the equipment to take unauthorized photographs, sketches, drawings, maps or geographical representations of activities, locations or equipment on the JRTC and Fort Polk installation. Personnel will receive a receipt for any confiscated equipment. PAO will be notified prior to confiscation of equipment belonging to the news media.

5. The Security and Intelligence Division, DPTMS is the proponent for this policy.



DAVID G. SAGE  
COL, IN  
Commanding

DISTRIBUTION:  
C, I

All,

Contractors are required to meter job office trailers for electricity and water.

I will need at least the following information:

LEGAL BUSINESS NAME:  
DOING BUSINESS AS (DBA):  
ADDRESS: (Correct & Complete)  
TELEPHONE:  
POC:

TAX ID:  
CAGE CODE:  
DUNS:

MUST HAVE PHYSICAL STREET ADDRESS, NO P O BOX OF HOME OFFICE

V/R

Robert Hughes ([Robert.J.Hughes@us.army.mil](mailto:Robert.J.Hughes@us.army.mil))

HQ JRTC & Fort Polk Directorate of Public Works  
6661 Warrior Trail  
Bldg, 350, Suite 230  
Fort Polk, LA 71459

Office - (337) 531-6944  
Fax - (337) 531-8949  
Cell - (337) 353-5876

Friday, September 07, 2012





Building 3305  
 Fort Polk, La. 71459  
 Phone: 337-531-6042  
 Fax: 337-653-3531

**Fort Polk Utility Location & Dig Permit Request**  
**Issue Date: 31 March 2009**

Date	
Location	
What is being done	
POC Name	
POC Number	

**Directions:**

1. **Contractor** will mark area to be excavated in white.
2. Louisiana Law requires you (**CONTRACTOR**) to contact Louisiana 1 Call, representing all private and public utility companies. Dial 1-800-272-3020 – seven days in advance and have digging location information available at time of call. Any company with utilities in the area will mark the respective utility **within 48 hours**.

Louisiana 1 Call Ticket Number: \_\_\_\_\_

3. For Telephone, Data Lines and Fiber Optic Line utility locations on Fort Polk:
  - **Contact DOIM/ATS Contractor (GSTek) at 531-4019, bldg 3604**
  - Request location services seven days prior to digging.
  - Contractors are responsible to maintain marks.

DOIM/ATS Ticket Number: \_\_\_\_\_

4. Sprint/ADSS 537-4711 or **208-2025**.

Sprint/ADSS Ticket Number: \_\_\_\_\_

5. Gas and Exterior Electric. When you have completed 1 thru 4 above, hand carry this form along with a sketch of the area to be excavated to the **Work Reception Office in Bldg. 3307**. DPW will initiate service orders to locate gas and exterior electric. When you have received these service orders bring this form along with sketches to **Bldg 3305**. After all dates and times have been met you may pick up the approved dig permit, and proceed to excavate.

- Exterior Electric Service Order #: \_\_\_\_\_
- Natural Gas Service Order #: \_\_\_\_\_
- Chilled Water Service Order #: \_\_\_\_\_
- Hot Water Service Order #: \_\_\_\_\_

6. Permit to dig on Fort Polk is approved on \_\_\_\_\_

Approved by PRIDE Public Works Dpt. \_\_\_\_\_

## **Pretreatment of Termites on Fort Polk**

### **Pier Foundations**

The termiticide of choice for pier foundations is Termador. Use of any other product must be approved by the Installation Pest Management Office.

The footings of each pier will be treated at label rate prior to the pier being installed. Additionally, the soil around the pier will be treated at label rate once back fill dirt is added and prior to completion of project.

### **Slab Foundations**

The termiticide of choice for pier foundations is Termador. Use of any other product must be approved by the Installation Pest Management Office.

All footings will be treated at label rate prior to footing being poured. The ground will be treated at label rate prior to rebar or plastic being installed. Additionally, the back fill soil will be treated at label rate, after back fill is complete and prior to completion of project.

### **Additional Requirements:**

1. The Pest Control company performing the treatment must have a Louisiana Commercial Applicators License.
2. The Pest Control company is required to provide the Pest Management Office a photo ID and a copy of the Applicator's license.
3. All termiticides will be mixed onsite.
4. The Pest Control company will provide Pest Management with the following upon completion of each treatment.
  - a. Name of Termiticide
  - b. Lot Number of product
  - c. Total gallons applied
  - d. Total Pounds of Active Ingredients applied

## **Standard Operating Procedure: Design, Review, Submittal, and Approval Requirements for Construction Projects Modifying Fort Polk Water/Wastewater Systems**

### **1.0 Introduction**

State and Federal law, and the Louisiana Sanitary Code, requires that - prior to the start of construction - approval by the Louisiana Department of Health and Hospitals (DHH) be obtained for plans and specifications of all public water systems and wastewater systems. This applies to new facilities as well as modifications or extensions affecting hydraulic capacity, system loading, quality of finished water, etc., of existing systems. Individual building plumbing and service lines do not normally require DHH approval (unless the facility presents a degree of hazard to the water system requiring backflow prevention measures). See *Louisiana Plumbing Code, Cross Connection Control*.

Failure to adhere to DHH policy and protocol may subject the installation to Notices of Violation, 'Boil Water' orders, fines and penalties, or other regulatory enforcement actions.

### **2.0 Determination of Applicability**

The DPW project officer should review the project to determine applicability of the regulations. Any extension or modification to the installations water or wastewater (W3) systems as described above will require submittal of plans and specifications to the DHH for approval. If assistance is needed in making this determination, the project officer should coordinate with DPW-OMD and/or DPW-ENRMD. If the applicability is determined, the project may not proceed until the State review and approval process is completed. If it is determined that the requirements of the Sanitary Code are not applicable to the project, the project officer may proceed with project execution.

### **3.0 Minimum Information Requirements for Project Submittal**

In order to expedite review and approval of projects, the following shall be provided, as applicable, when submitting plans and specifications for construction and/or modification of Fort Polk's water systems and wastewater facilities to the DHH:

A single set of detailed plans and specifications should be submitted at least 60 days prior to the time the approval, comments, or recommendations are desired by the owner. Plans must be signed, stamped, and dated by a registered professional engineer,

licensed to practice in the State of Louisiana. For plans designed by federally-employed government engineers, this requirement is waived.

A detailed design summary package for all water and sewerage facilities must be submitted. The applicable design summary forms (Appendix A) should be used and submitted to the DHH with the design plans and specifications. These forms, however, are typically structured for small to medium sized projects, and additional information may be needed for larger projects involving water and wastewater facilities (e.g.: a new wastewater treatment facility, a new well and water treatment plant, etc.). The design summary package is not a review tool therefore any details relevant to the review should also be included in plans and specifications.

Submit a vicinity map and plot plan showing the project location (and adjacent property if applicable).

Submit layout drawings of the project's wastewater collection and water distribution mains, showing all pump stations, manholes, clean-outs, hydrants, valves, pipe size and materials, sewage main and collection line profiles, including depth, slopes and invert elevations, water main depths, etc., as well as the sewage treatment facility location and the water well locations. Design details that do not pertain to the sanitary features of the project – such as grading plans, storm water drainage, street details, etc. -- need not be included. Some electrical may be required for pumps (well pumps, booster pumps, chemical feed pumps, transfer pumps, etc.).

Submit detailed drawings of applicable sewage treatment, collection, and pumping facilities and water well, storage, and treatment facilities with plan and profiles views, showing dimensions, capacities, materials, and elevations.

For extensions to existing, information pertaining to the existing system should be submitted. It may be necessary to provide present population served, design capacity of present system, capacity of lift stations, etc. The ability of the existing system to absorb the extra loading should be documented.

The review of the plans and specifications are typically made in accordance with the *Recommended Standards for Sewage Works*, 1997 Edition, and the *Recommended Standards for Water Works*, 2003 Edition, promulgated by the Great Lakes and Upper Mississippi River Board of State Sanitary Engineers. Design standards for water well construction is contained in the *Louisiana Water Well Rules, Regulations, and Standards*, November, 1985 Edition, promulgated by the Louisiana Department of Transportation and Development, Water Resources Division. Additional design standards for water and wastewater facilities are given in the State Sanitary Code.

#### 4.0 Internal Review and Submittal Protocol

Once the applicability of the DHH review and approval process has been determined, the DPW project officer or appropriate branch chief should use the following steps to ensure proper information-flow, internal coordination, and State submittal requirements are followed.

- DPW-Engineering or Planning project officer or appropriate branch chief briefs the W3 group on the project scope as it pertains to the W3 systems. The project officer is appointed by Chief, Engineering or Planning Division for each project submitted. POC: 531-1428 or 531-4168
- DPW-Engineering or Planning project officer or appropriate branch chief provides pre-final design plans and specifications to W3 group for review. In order to ensure that proper installation physical security protocols are maintained, the project officer should 'sign out' copies of plans delivered for review to appropriate W3 members. Internal review time should be determined by the DPW or W3-Executive Steering Committee based on installation and mission priorities and noted on the documents provided for review. Status of reviews will be tracked and reported at each W3 meeting.
- Following collection of review comments and corrections or modifications, the DPW project officer forwards completed design to the W3 group for a final review process; or, the project officer may elect to simply report the changes made to the W3 group in the case of minor modifications necessitated by the initial review.  
Note: A NEPA request will not be approved until State approval is granted.  
NEPA POC: 531-7417
- DPW- Engineering or Planning Division project officer provides W3-reviewed and completed design plans to the Chief, Engineering Division. The Chief, Engineering or Planning Division may submit the plans directly to the Louisiana DHH regional engineer; or, the Chief, Engineering Division or Planning Division may request that a professional staff member of the Planning Division, or other DPW professional staff member, deliver the plans directly to the Louisiana DHH regional engineer. The Chief, Engineering Division, reports the submission of plans to the ENRMD Compliance Branch so that they can be tracked and reported to the W3.
- Upon project completion, DPW-Engineering or Planning provides to DPW-ENRMD Compliance Branch a certification that construction was done IAW the approved design. DPW-ENRMD Compliance Branch submits certification to the State.

Additionally, close coordination must be maintained with applicable organizations of the W3 working group. Organizational contact information is as follows:

DES-Fire Department, 531-2026;  
DES-Physical Security, 531-4913;  
DPW-Engineering, 531-6186;  
DPW-ENRMD, 531-6008;  
DPW-OMD, 531-2421;  
DPW-Planning, 531-6103;  
Picerne Military Housing, 537-5000;  
Preventive Medicine-EH, 531-4846;  
USACE, Resident Office, 531-2933.

## APPENDIX D CROSS CONNECTION CONTROL

(APPENDIX D IS A REQUIREMENT OF THIS CODE)

★ **D101** The purpose of this Appendix is to provide for the protection of the public from the possibility of contamination or pollution by isolating such contaminants or pollutants which could backflow or back-siphon into a potable water supply; to promote the elimination or control of existing cross-connections, actual or potential, between potable water supplies and non-potable systems/sources; and to promote the maintenance of a continuing program of cross-connection control in the State of Louisiana.

**D102 DEFINITIONS** Definitions contained in Chapter 2 shall also apply to this appendix except where the following special definitions shall apply:

**AIR GAP (WATER DISTRIBUTION)** - in a water supply system, the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood-level rim of the receptacle.

**ATMOSPHERIC VACUUM BREAKER** - a device which prevents back-siphonage by creating an atmospheric vent when there is either a negative pressure or sub-atmospheric pressure in a water system.

**BACKFLOW** - the flow of water or other liquids, mixtures, or substances into the distribution pipes of a potable water supply from any source other than its intended source. (See Back-Pressure Backflow and Back-Siphonage Backflow.)

**BACK-PRESSURE BACKFLOW** - a condition which occurs when the downstream pressure is higher than the supply pressure causing a reversal of the normal direction of flow.

**BACK-PRESSURE BACKFLOW PREVENTER** - a device to prevent backflow due to a general condition in which the pressure in the system becomes greater than the supply pressure, the system being above atmospheric pressure. (See also Double Check Valve Assembly, Double Check Valve with Intermediate Atmospheric Vent, and Reduced Pressure Principle Backflow Preventer).

**BACKFLOW PREVENTER** - a device to prevent backflow. As there are two conditions of backflow, the device should be identified by the conditions which it is designed to prevent. (See Back-Pressure Backflow Preventer, Reduced Pressure Principle Backflow Preventer, Back-Siphonage Backflow Preventer).

**BACK-SIPHONAGE BACKFLOW** - a reversal of the normal direction of flow in the pipeline due to a negative

pressure (vacuum) being created in the supply line with the backflow source subject to atmospheric pressure.

**BACK-SIPHONAGE BACKFLOW PREVENTER, GENERAL** - a device or combination of devices for preventing back-siphonage backflow in a water supply line.

**BAROMETRIC LOOP** - a fabricated piping arrangement rising at least 35 feet at its topmost point above the highest fixture it supplies. It is utilized in water supply systems to protect against back-siphonage.

**BY-PASS** - any system of piping or other arrangement whereby the water may be diverted around any part or portion of a water supply or treatment facility including, but not limited to, around an installed backflow preventer.

**COMMERCIAL DISHWASHER** - a mechanical dishwasher that is used in other than domestic applications.

Friday, September 07, 2012

**CONTAINMENT** - a method of backflow prevention which requires a backflow prevention device or method on the water service pipe to isolate the customer from the water main.

**CONTAMINATION** - the introduction into water of microorganisms, chemicals, toxic substances, wastes or wastewater that makes the water unfit for its intended use.

**CROSS CONNECTION** - any connection or arrangement by means of which contaminants of any kind can be caused to enter the potable water supply system.

**DEGREE OF HAZARD** - the term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water.

**DOUBLE CHECK VALVE ASSEMBLY** - an assembly of two (2) independently operating spring loaded check valves with tightly closing shut off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve.

**DOUBLE CHECK VALVE WITH INTERMEDIATE ATMOSPHERIC VENT** - a device having two (2) spring loaded check valves separated by an atmospheric vent chamber.

**DUAL CHECK VALVE** - two (2) spring loaded, independently operating check valves without tightly closing shut-off valves and test cocks. Generally employed immediately down stream of the water meter. Not an approved backflow prevention device.

**FIXTURE ISOLATION** - a method of backflow prevention in which a backflow preventer is located to correct a cross-connection at an in-plant location rather than at a water service pipe.

**HOSE BIBB VACUUM BREAKER** - a device which is permanently attached to a hose bibb and which acts as an atmospheric vacuum breaker.

**MASTER METER** - a meter serving multiple residential dwelling units. Individual units may or may not be sub-metered.

**POTABLE WATER** - water having bacteriological, physical, radiological and chemical qualities that make it safe and suitable for human drinking, cooking and washing uses.

**POTABLE WATER SUPPLY** - a publicly owned or privately owned water supply system which purveys potable water.

**PRESSURE VACUUM BREAKER** - a device containing one or two independently operated spring loaded check valves and an independently operated spring loaded air inlet valve located on the discharge side of the check or checks. Device includes tightly closing shut-off valves on each side of the check valves and properly located test cocks for the testing of the check valve(s).

**PUBLIC WATER SYSTEM** - a particular type of water supply system intended to provide potable water to the public having at least fifteen service connections or regularly serving an average of at least twenty-five individuals daily at least sixty days out of the year.

**REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER** - an assembly consisting of two (2) independently operating approved check valves with an automatically operating differential relief valve located between the two (2) check valves, tightly closing shut-off valves on each side of the check valves plus properly located test cocks for the testing of the check valves and relief valves.

**WATER SERVICE PIPE (or SERVICE CONNECTION)** - the pipe from the water main and/or water meter, water supply system or other approved source of water supply, to the building or structure served.

**WATER SUPPLIER** - a person who owns or operates a water supply system including, but not limited to, a person who owns or operates a public water system.

**WATER SUPPLY SYSTEM** - the system of pipes or other constructed conveyances, structures and facilities through which water is obtained, treated to make it potable (if necessary) and then distributed (with or without charge) for human drinking, cooking, washing or other use.

**D103 AIR GAPS** The provision of air gaps shall be required for backflow prevention in any and all cases where such a measure is the most practical that can be employed. The "minimum required air gap (water distribution)" shall be in accord with ASME A 112.1.2.<sup>1</sup>

**Note:**

1. For informational purposes only, ASME A 112.1.2 generally requires a minimum required air gap equal to two times the effective opening (or 3 times the effective opening if affected by a nearby wall). Compliance shall be strictly determined by the provisions contained within the standard itself.

**D104.1 CONTAINMENT PRACTICES.** Backflow prevention methods or devices shall be utilized as directed by the Plumbing Official to isolate specific water supply system customers from the water supply system's mains when such action is deemed necessary to protect the water supply system against potential contamination caused by backflow of water from that part of the water system owned and maintained by the customer (*e.g.*, the piping downstream of the water meter, if provided).

**D104.2** As a minimum, the following types of devices or methods shall be installed and maintained by water supply system customers immediately downstream of the water meter (if provided) or on the water service pipe prior to any branch line or connections serving the listed customer types and categories:

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Table D104<sup>1</sup>

Air Gap	
1.	Fire Protection/Sprinkler System utilizing non-potable water as an alternative or primary source of water
Reduced Pressure Principle Backflow Preventer	
1.	Hospitals, Out-Patient Surgical Facilities, Renal Dialysis Facilities, Veterinary Clinics
2.	Funeral Homes, Mortuaries
3.	Car Wash Systems
4.	Sewage Facilities
5.	Chemical or Petroleum Processing Plants
6.	Animal/Poultry Feedlots or Brooding Facilities
7.	Meat Processing Plants
8.	Metal Plating Plants
9.	Food Processing Plants, Beverage Processing Plants
10.	Fire Protection/Sprinkler Systems using antifreeze in such system
11.	Marinas/Docks
12.	Radiator Shops
13.	Commercial Pesticide/Herbicide Applicators
14.	Photo/X-ray/Film Processing Laboratories
Double Check Valve Assembly	
1.	Fire Protection/Sprinkler Systems
2.	Multiple Residential Dwelling Units served by a master meter.
3.	Multistoried Office/Commercial Buildings (over 3 floors)
4.	Jails, Prisons, and Other Places of Detention or Incarceration

**Note:**

1. Other Containment Practices - Table D104 is not inclusive of all potential contamination sources which may need containment protection. For potential contamination sources not listed in this table, backflow prevention methods or devices shall be utilized as directed by the Plumbing Official [or by the water supplier for those devices which may be associated with the water supplier's own water supply system located on public property or otherwise under the complete control of the water supplier (*e.g.*, water meter and the piping upstream of the water meter, if provided)].

**D105.1 FIXTURE ISOLATION PRACTICES** Water supply system customers shall provide and maintain backflow prevention methods or devices as directed by the Plumbing Official within that part of the water system owned and maintained by the customer (*e.g.*, the piping downstream of the water meter, if provided, or downstream from any containment device) to protect the on-site users of the water system against potential contamination due to backflow.

**D105.2** As a minimum, the following types of devices or methods shall be employed as appropriate for the following points of usage:

Table D 105<sup>1, 2</sup>

Air Gap	
1.	Cooling Towers
2.	Chemical Tanks
3.	Commercial Dishwashers in commercial establishments
4.	Ornamental Fountains
5.	Swimming Pools, Spas, Hot Tubs
6.	Baptismal Fonts
7.	Animal Watering Troughs
8.	Agricultural Chemical Mixing Tanks
9.	Water Hauling Tanks
Reduced Pressure Principle Backflow Preventers	
1.	Commercial Boilers
2.	Air Conditioning, Chilled Water Systems
3.	Air Conditioning, Condenser Water Systems
4.	Pot-type Chemical Feeders
5.	Lawn Sprinklers with Fertilizer Injection
6.	Photo/X-ray/Film Processing Equipment
Double Check Valve Assembly	
1.	Food Processing Steam Kettles
2.	Individual Travel Trailer Sites
Atmospheric or Pressure Type Vacuum Breakers	
1.	Laboratory and/or Medical Aspirators
2.	Flushing Rim Bedpan Washers
3.	Garbage Can Washers
4.	Laboratory or Other Sinks with threaded or serrated nozzles
5.	Flushometers
6.	Commercial Washing Machines
7.	Lawn Sprinklers
8.	Hose Bibbs
9.	Commercial Dishwashers in commercial establishments

**Notes:**

1. See Tables G104.6 and G104.7 for fixture isolation practices in hospital plumbing systems.
2. Other Fixture Isolation Practices - Table D105 is not inclusive of all potential contamination sources which may need fixture isolation protection. For potential contamination sources not listed in this table, backflow prevention methods or devices shall be utilized as directed by the Plumbing Official.

**D106 RESPONSIBILITY OF WATER SUPPLIERS**

Water suppliers shall be responsible to insure the protection of the water supply system from potential contamination from certain of their customers through containment practices as prescribed by this Chapter or as otherwise directed by the State Health Officer.

**D107 BYPASSES**

**D107.1** All bypasses shall have the same level of backflow protection as the main water supply line.

**D108 MAINTENANCE/FIELD TESTING****D108.1 Types of Backflow Preventers to be Field Tested**

**D108.1.1** To ensure that installed backflow preventers provide continuing backflow protection, the following types of backflow preventers shall be checked and field tested in accordance with the frequency established in

D108.2 by a Backflow Prevention Assembly Tester who meets ASSE 5000 Professional Qualification Standard, or other individuals holding a testing certificate from a nationally recognized backflow certification organization approved by the Plumbing Official [or found acceptable to the water supplier for those devices which may be associated with the water supplier's own water supply system located on public property or otherwise under the complete control of the water supplier (*e.g.*, water meter and the piping upstream of the water meter, if provided)]:

- (a) double check valve assemblies;
- (b) reduced pressure principle backflow preventers;
- (c) pressure type vacuum breakers;
- (d) air gaps on high hazard applications; and
- (e) as otherwise specified by the Plumbing Official (or by the water supplier for those backflow preventers located on public property or otherwise under the complete control of the water supplier (*e.g.*, water meter and piping upstream of the water meter, if provided)).

It is recommended that other types of backflow prevention devices be visually checked periodically.

**D108.1.2** Any backflow preventer in D108.1.1 which is found defective shall be repaired by a duly authorized water supply protection specialist licensed by the Louisiana State Plumbing Board pursuant to LSA - R.S. 37:1361 *et seq* and its implementing regulations (LAC 46:LV.101 *et seq*) or, for those backflow preventers located on public property or otherwise under the complete control of the water supplier (*e.g.*, water meter and the piping upstream of the water meter, if provided), by a Backflow Prevention Assembly Repairer who meets ASSE 5030 Professional Qualification Standard or other individuals found acceptable to the water supplier.

### **D108.2 Frequency of Field Testing**

The backflow prevention devices specified in D108.1.1 shall be field tested:

- (a) upon installation;
- (b) when cleaned, repaired, or overhauled;
- (c) when relocated;
- (d) annually; and
- (e) as required by the Plumbing Official (or by the water supplier for those backflow preventers located on public property or otherwise under the complete control of the water supplier (*e.g.*, water meter and piping upstream of the water meter, if provided)).

### **D108.3 Owner Responsibilities**

**D108.3.1** It shall be the duty of the owner of the backflow preventer to see that these tests are made in a timely manner in accord with the frequency of field testing specified in D108.2.

**D108.3.2** The owner shall notify the Plumbing Official and/or water supplier in advance when the tests are to be undertaken so that the Plumbing Official and/or water supplier may witness the tests if so desired.

**D108.3.3** All tests, repairs, overhauls or replacements shall be at the expense of the owner of the backflow preventer.

**D108.3.4** All records of such tests, repairs, overhauls or replacements shall be kept by the owner of the backflow preventer for at least 5 years and, upon request, shall be made available to the Plumbing Official, water supplier, and/or the State Health Officer.

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# New Construction Waste Management

## Plans and Methods



## Army Policy on Waste Management

- 50% diversion (by weight) from landfill of construction and demolition waste for all Army projects.
- Waste type and quantities must be tracked, documented, and upward reported (SWAR)



## Contract Requirements for Waste Management

- 50% diversion (by weight) from landfill of construction and demolition waste  
(01010, Section 6)
- A Waste Management Plan is required  
(01355 Environmental Protection Plan)



## Added Bonus

- The two easiest LEED credit points:
  - Automatically pick up LEED Credit MR 2.1  
(Achieve 50% diversion of C&D waste from landfill)
  - With little effort, pick up LEED Credit MR 2.2  
(Achieve 75% diversion of C&D waste from landfill)



## Management Plan

- Section 1 – Company Philosophy
- Section 2 – Project Waste Management Goals
- Section 3 – Communication Plan
- Section 4 – Expected Waste Streams, Disposal, and Handling



## How to Meet Army and USACE Waste Management Goals (WMP Section 2)

- Prevent – don't create/promote the waste in the first place
- Reduce – reduce the amount of waste generated for a given material/element
- Reuse – reuse scrap
- Recycle – send back to the company for remanufacturing or to a recycling facility



## Prevention

- Pre-fabrication/Pre-cut – manufacture to exact dimensions
- Accurately order the amount of material needed
- Measure carefully to avoid end cuts
- Store materials so they are not damaged



## Reduce

- Order and ship in bulk where possible, avoiding excess packaging
- To encourage efficient use of materials, avoid paying installers on the basis of smaller units of measure (i.e. sq. ft. instead of sheet)
- GCs include similar recycling/diversion requirements in subcontracts (incl. Mgmt Plans, monitoring, and documentation).



## Reuse

- Save sizeable pieces for use elsewhere
  - carpet tiles piece from one edge may fit at the edge of another location
  - wallboard pieces can be used around doors and windows
  - lumber pieces can be used as spacers or blocking
  - Reuse PVC cut-offs for use as stubs for wall drains
- Optimum Value Engineering for wood construction



## Recycle

- |  |                      |
|--|----------------------|
| • Concrete/Asphalt/Masonry                     | • Wood               |
| • Drywall/Gypsum                               | • Glass              |
| • Metal  | • Carpet/Carpet Tile |
| • Plastics                                     | • Paints             |
| • Cardboard/paper/fibers                       | • Floor Tile         |
| • Site/Landclearing Debris (vegetation, soils) | • Acoustical Tile    |



## Ft. Bliss Resources

- Now
  - Cardboard/paper – Ft. Bliss can accept small quantities of paper and cardboard for recycling
- Future
  - Clean wood – Ft. Bliss owns a shredder, but no end use of shredded material is currently identified.
  - Soil –provide native fill material, accept native soil
  - Concrete/Aggregate/Asphalt/Masonry



## Site Handling

- Interior collection containers in centralized convenient locations for the trades.
- Exterior recycling containers clearly labeled and located in convenient locations for the trades.
- For pieces of materials to be reused – make sure the trades know where they can find these materials.





## Site Handling

- Keep garbage out of interior and recycling containers.
- Provide frequent and well labeled garbage containers, both interior and exterior.
- Training and Communication
- Whole Building Design Guide Construction Waste Management Resource Page ([www.wbdg.org/design/cwm.php](http://www.wbdg.org/design/cwm.php))



## Keeping Track

- Collect and organize documentation from receiving facilities (weight tickets, reports)
- Obtain/Estimate weights for those items not taken to a facility (elements returned to manufacture, wood taken to Ft. Bliss for mulching, etc.)
- Organize in coming information daily (DCQCRs, Excel spreadsheet)
- Keep quarterly (Dec, March, June, and Oct) and final (end of project) reports in mind
  - keeping track daily/regularly will make the final report easy.



## Government Oversight

- Plan-Do-Check-Act
- Review and approval of Waste Mgmt Plan prior to start of construction.
- QAR will check regularly interior and exterior collection bins to confirm appropriate use.
- QAR will ask regularly to see your tracking document/notebook/file.
- QAR will conduct periodic quick calculations to confirm that waste diversion is on track.
- Final waste report – diversion calculation must be verifiable (values easily matched to waste documentation)



## Need Help?

Elizabeth Chien  
206-764-6718  
206-499-6119 cell  
[Elizabeth.A.Chien@usace.army.mil](mailto:Elizabeth.A.Chien@usace.army.mil)

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## Tips to improve Reduce, Reuse, and Recycle

Material	Planning	On-Site
General	<ul style="list-style-type: none"> <li>&gt; Order products with recycled content.</li> <li>&gt; To reduce waste and cost, accurately order in the amount of material needed.</li> <li>&gt; Request suppliers to limit packaging.</li> <li>&gt; Ask your vendors to take non-recyclable packaging back for reuse.</li> <li>&gt; Use larger pieces elsewhere on the project (fillers and shorter pieces can be used to fill in).</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Make sure both interior collection containers and exterior recycling dumpsters are convenient and clearly labeled.</li> <li>&gt; Store materials so they are not damaged.</li> <li>&gt; Measure carefully to avoid end cuts.</li> </ul>
Concrete	<ul style="list-style-type: none"> <li>&gt; Use concrete mix containing fly ash as part of the cementitious content of the concrete.</li> <li>&gt; Request CMUs that contain recycled content from your supplier.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Separate and recycle asphalt and concrete.</li> <li>&gt; Use reusable forms and supports to the maximum extent possible.</li> <li>&gt; Reuse removed crushed concrete and asphalt as aggregate, sub-base material or fill.</li> <li>&gt; Designate a location for excess concrete for use in paving, post footing anchorage, reinforcement, etc.</li> <li>&gt; Store materials so that they are not damaged or discolored.</li> </ul>
Drywall	<ul style="list-style-type: none"> <li>&gt; Order drywall with recycled content gypsum.</li> <li>&gt; To reduce waste and cost, accurately order in the amount of material needed.</li> <li>&gt; To encourage efficient use of materials, avoid paying installers on the basis of sheets of material installed (try using sq. ft. installed instead).</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Store materials so they are not damaged.</li> <li>&gt; Measure carefully to avoid end cuts.</li> <li>&gt; Separate and recycle waste drywall.</li> <li>&gt; Make sure both interior collection containers and exterior recycling dumpsters are convenient and clearly labeled.</li> <li>&gt; Save sizeable pieces of drywall for use around doors, windows, or built-ins, or for reuse on another job.</li> </ul>
Electrical	<ul style="list-style-type: none"> <li>&gt; Order plumbing and other mechanical supplies with recycled content.</li> <li>&gt; To reduce waste and cost, accurately order the amount of material needed.</li> <li>&gt; Ask your vendors to reduce the amount of packaging (pallets, cardboard, plastic shrink wrap, metal bands) that is delivered to the job-site.</li> <li>&gt; Ask your vendors to take non-recyclable packaging back for reuse.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Separate and recycle cardboard.</li> <li>&gt; Separate and recycle metals and wire.</li> <li>&gt; Separate and recycle plastics, such as PVC pipe.</li> <li>&gt; Make sure both interior collection containers and exterior recycling dumpsters are convenient and clearly labeled.</li> <li>&gt; Store materials so they are not damaged.</li> <li>&gt; Measure carefully to avoid end cuts.</li> </ul>

Material	Planning	On-Site
Mechanical	<ul style="list-style-type: none"> <li>&gt; Order electrical, plumbing, and other mechanical supplies with recycled content.</li> <li>&gt; To reduce waste and cost, accurately order the amount of material needed.</li> <li>&gt; Ask your vendors to reduce the amount of packaging (pallets, cardboard, plastic shrink wrap, metal bands) that is delivered to the job-site.</li> <li>&gt; Try precut and prefabricated components such as commercial heating and cooling ductwork or commercial sprinkler systems.</li> <li>&gt; Ask your vendors to take non-recyclable packaging back for reuse.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Separate and recycle cardboard.</li> <li>&gt; Separate and recycle plastics, such as PVC pipe.</li> <li>&gt; Make sure both interior collection containers and exterior recycling dumpsters are convenient and clearly labeled.</li> <li>&gt; Store materials so they are not damaged.</li> <li>&gt; Measure carefully to avoid end cuts.</li> </ul>
Plumbing	<ul style="list-style-type: none"> <li>&gt; Order plumbing and other mechanical supplies with recycled content.</li> <li>&gt; To reduce waste and cost, accurately order the amount of material needed.</li> <li>&gt; Ask your vendors to reduce the amount of packaging (pallets, cardboard, plastic shrink wrap, metal bands) that is delivered to the job-site.</li> <li>&gt; Ask your vendors to take non-recyclable packaging back for reuse.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Retain PVC cut-offs for use as stubs for wall drains.</li> <li>&gt; Properly clean joints to prevent leaking.</li> <li>&gt; Separate and recycle plastic, including PVC, if possible.</li> <li>&gt; Separate and recycle cardboard.</li> <li>&gt; Make sure both interior collection containers and exterior recycling dumpsters are convenient and clearly labeled.</li> <li>&gt; Store materials so they are not damaged.</li> <li>&gt; Measure carefully to avoid end cuts.</li> </ul>
Site/Landclearing	<ul style="list-style-type: none"> <li>&gt; shred vegetation for reuse in project landscaping.</li> <li>&gt; design landscaping that reuses stone.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Separate and recycle asphalt and concrete/masonry.</li> <li>&gt; Sell all marketable trees designated for removal.</li> <li>&gt; Grind, chip, or shred other vegetation for mulching and composting.</li> <li>&gt; Separate stumps, brush, and other wood waste for recycling.</li> <li>&gt; Separate and recycle rebar and other metals.</li> <li>&gt; Reuse removed crushed concrete and asphalt as aggregate, sub-base material or fill.</li> <li>&gt; Provide on-site locations for as much excavated rock, soil, and vegetation as possible.</li> </ul>

Material	Planning	On-Site
Wood	<ul style="list-style-type: none"><li>&gt; To reduce waste and cost, accurately order the amount of material needed.</li><li>&gt; Use larger pieces elsewhere on the project (fillers and shorter pieces can be used to fill in).</li><li>&gt; Use building systems such as modular systems or foam-core panels that minimize the use of wood (systems that contain recycled wood chips or wood from small diameter secondary trees).</li></ul>	<ul style="list-style-type: none"><li>&gt; Segregate bits and ends for recycling from useable pieces to be used elsewhere.</li><li>&gt; Make sure both interior collection containers and exterior recycling dumpsters are convenient and clearly labeled.</li><li>&gt; Store materials so they are not damaged.</li><li>&gt; Measure carefully to avoid end cuts.</li><li>&gt; Save sizeable pieces of wood in a central area for use as spacers, blocking, kindling, or for use on another job.</li><li>&gt; Designate a central area for end-cuts and damaged wood, making it convenient for carpenters to find and use scrap wood.</li></ul>

CONSTRUCTION / DEMOLITION SWARWeb PICKLIST		
MAJOR CATEGORY	SUB-CATEGORY	DEFINITION
<b>Wood</b>		
	Structural	TBD
	Finished	TBD
	Treated	TBD
	Other (C/D Wood)	TBD
<b>Metal</b>		
	Steel	TBD
	Copper	TBD
	Aluminum	TBD
	Mixed Metal	TBD
	Other (C/D Metal)	TBD
<b>Masonry/Asphalt/Concrete/ Stone</b>		
	Asphalt	TBD
	Brick	TBD
	Concrete	TBD
	Concrete Block Unit	TBD
	Stone	TBD
	Other (C/D Masonry/Asphalt)	TBD
<b>Land Clearing Debris</b>		
	Top Soil	TBD
	Sub Soil	TBD
	Petroleum-Contaminated Soil	TBD
	Non-Hazardous Lead-Contaminated Soil	TBD
	Vegetation/Timber (tree trunks & limbs)	TBD
	Crushed Stone/Base	TBD
	Other (C/D Land Clearing)	TBD
<b>Other</b>		
	Siding	TBD
	Composition Roof	TBD
	Insulation	TBD
	Doors/Windows/Stairs/Cabinets	TBD
	Ceiling Tile	TBD
	Gypsum/Plaster	TBD
	Plastic	TBD
	Glass	TBD
	Paper	TBD
	Other (C/D Other)	TBD
<b>Additional Information</b>		
Project Number		
Building Number(s)		
Reuse (Installation)		
Reuse (Off-Site)		
Recycle (Installation)		
Recycle (Off-Site)		
Bury (Installation)		
Bury (Off-Site)		
Dispose (Installation)		
Dispose (Off-Site)		
Other		
Source: Army Environmental Center, Charles Harris, (410) 436-1224, charles.harris2@us.army.mil		

## Non- Hazardous Waste Management Plan

- a. Name of individuals on the Contractor's staff responsible for waste prevention and management.
- b. Specific actions that will be taken to reduce solid waste generation.
- c. Description of the specific approaches to be used in salvage/reuse/recycling/other diversion of the various materials generated, including the areas and equipment to be used for processing, sorting, and temporary storage of wastes.
- d. Identification of waste streams, including estimated types and quantities, of the waste to be generated.
- e. Identification of local and regional salvage/reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity.
- f. List of specific waste materials that will be salvaged for resale, salvaged for reuse, or recycled. Recycling facilities that will be used shall be identified. If a recycling facility (public or private) exists within a 50 mile radius of the project site, its use is required for all materials that facility accepts and that cannot be otherwise reused.
- g. Identification of materials that cannot be recycled/reused with an explanation or justification.
- h. Name of landfill and/or incinerator to be used for waste that are not diverted and the estimated costs for disposal.
- i. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and/or landfill cost avoidance.

## Hazardous Waste Management Plan (in addition to the requirements above)

- a. Types of wastes anticipated to be managed. This should include a discussion of processes which are generating the waste, the volumes anticipated, and the EPA/state waste codes associated with the waste (40 CFR 261, Subpart C and D).
- b. The regulatory status of the waste. In other words, whether the waste is subject to large quantity generator, small quantity generator, or conditionally exempt small quantity generator standards (40 CFR 262.34).
- c. The locations in which wastes will be accumulated will be discussed. This should discuss whether these are 90/180 day accumulation areas, satellite accumulation points,

or permitted storage areas. Preferably a map indicating the precise location should be included (40 CFR 262.34).

d. Inspection requirements. This should discuss what will be inspected, how often it will be inspected, who will conduct the inspection, what the inspection log will contain, and where the inspection records will be retained (40 CFR 262.34, 40 CFR 265.174, and 40 CFR 265.195).

e. Contingency Planning. Large quantity generators are required to have a contingency plan. Small quantity generators are required to post certain information (40 CFR 262.34 and 40 CFR 265 Subparts C and D).

f. Marking requirements. This should discuss what type of hazardous waste markings are to be utilized during accumulation (40 CFR 262.32).

g. Container types. Types of containers used to accumulate hazardous wastes should be identified. Compatibility with the waste being stored should be considered as well as whether the containers will meet packaging requirements for off-site transport (49 CFR 171.178).

h. Treatment requirements. How will wastes be treated to meet land disposal restrictions (40 CFR 268.40). If elementary neutralization is being performed to render waste non-hazardous, as statement should be included which indicates the activity is being performed under a permit exclusion (40 CFR 270.1(c)(2)(v)).

i. Disposal requirements. This should discuss whether wastes and/or treatment residues will be disposed in a Subtitle C, hazardous waste disposal facility or in a Subtitle D, nonhazardous waste facility.

j. Proposed treatment, storage, or disposal facilities (TSDFs). This should provide the name, address, telephone number, and EPA ID number of the TSDFs proposed to be utilized for the waste.

k. LDR forms. This should provide copies of the LDR forms from the proposed receiving facilities.

l. Recycling Facilities. This should discuss how the waste is to be salvaged, reused, and/or recycled. The name, address, and phone number of the facilities proposed for waste diversion should be provided.



## Waste Management Plan Template

### Section 1. Company Mission Statement/Company Philosophy and Organization

- a. Philosophy – basic company approach to waste management (i.e.: prevent, reduce, reuse, recycle, dispose)

### Section 2. Project Waste Management Goal

- a. Contract required goal.
- b. Specific actions that will be taken to prevent or reduce solid waste generation. This includes identifying those companies providing material and equipment that are willing to accept the return of the resulting waste product after installation (floor tiles, ceiling/acoustical tiles, carpet tiles, etc.). Also identify material/companies willing to send large quantities of items in bulk, rather than individually wrapped (box of 200 door knobs instead of individually wrapped door knobs, pallets of stacked floor tiles instead of box of 12 floor tiles).
- c. Description of the specific approaches to be used in salvage/reuse/recycling/other diversion of the various materials generated, including the areas and equipment to be used for processing, sorting, and temporary storage of wastes.
- d. List of specific waste materials that will be salvaged for resale, salvaged for reuse, or recycled.
- e. Identification of materials that cannot be recycled/reused with an explanation or justification.

Generally, its better (more resourceful) to reduce, than to reuse, and better to reuse than to recycle. However, it's not realistic to eliminate all waste, or salvage all materials not used on a particular job. Following is our Waste Management Plan.

Reduce means to prevent waste before it happens. You can reduce waste significantly on a construction project by “tweaking” your practices a bit; this means designing in less waste to begin with and minimizing damage and inefficient material use.

Reuse means to reuse materials as much as possible in your construction project. This includes:

- Materials removed during demolition
- Scrap generated on site
- Used materials or scraps from other jobs

Recycle means to separate recyclable materials from non-recyclable materials and supply them to a hauler or business so they can be processed and used to make new products. Another aspect of recycling is to Buy Recycled. Buying building materials with recycled content helps develop a market for the waste materials you recycle from your job site and “closes the loop.”

### **Section 3. Communication Plan**

- a. Name of individuals on the Contractor's staff responsible for waste prevention and management.
- b. Specific actions that will be taken to communicate waste management issues throughout the project.
- c. Specific actions that will be taken to communicate the waste management plan and procedures to new employees/subs.
- d. Specify where containers will be placed, how they will be labeled, how waste management practices will be enforced (acceptable and unacceptable items and practices), and how this information will be communicated to the site staff.
- e. Specific procedures and details on how the waste information (what where, how much, who, how) will be documented, organized, and tracked. This includes all waste streams that are returned, salvaged, reused, recycled, and landfilled.
- f. Specific details on how the waste information will be reported to the government (routinely – weekly? monthly? quarterly? and at project closeout – final total details).

### **Section 4. Expected Waste Streams, Disposal, and Handling (non-hazardous only)**

- a. Identification of waste stream (both diverted and landfilled.
- b. Quantity of each type of waste stream identified.
- c. Receiving facility or entity.
  - o Identification of local and regional salvage/reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity.
  - o Name of landfill and/or incinerator to be used for waste that are not diverted and the estimated costs for disposal.
- d. Specific site handling procedures.
- e. Identification of transportation method or company.

**Example Table Identifying Possible Waste Streams, Quantity, Disposal/Diversion Method, and Handling Procedures**

Material	Qty.	Disposal Method (where applicable)	Handling and Transportation Procedure
<b><u>New Construction</u></b>			
Concrete	15 cy		Break up concrete onsite with an excavator, load in trucks and haul to Echo Park Recycle
Forming Boards	6 tons	Reused as many times as possible then recycled to Renu Recycling	Stack next to supply of new form boards for reuse. Recycle clean unusable form in "clean wood" recycling dumpster
Clean Wood Scrap	3 tons	Scraps reused for form work, fire-breaks, etc., then recycled by Renu Recycling	Stack reusable pieces next to dumpster for Reuse. Separate unusable clean wood into "clean wood" recycling dumpster (including wood pallets)
CMUs	75 yds	Henson Masonry to recycle and submit report to recycling coordinator	Will request CMUs that contain recycled Content from supplier
Scrap Metal	5 tons	Renu Recycling Service	Deposit all metals in "metal" dumpster
Acoustical Tile			
Floor Tile			
Carpet Tile			
Gypsum/Wall board			
Cardboard			
Plastic			
Etc.			

## **Section 5. Hazardous Waste Management Plan (in addition to the requirements above)**

Be sure to coordinate Hazmat procedures with Tom Curcio (FL DPW) 253-966-6458.

- a. Types of wastes anticipated to be managed. This should include a discussion of processes which are generating the waste, the volumes anticipated, and the EPA/state waste codes associated with the waste (40 CFR 261, Subpart C and D).
- b. The regulatory status of the waste. In other words, whether the waste is subject to large quantity generator, small quantity generator, or conditionally exempt small quantity generator standards (40 CFR 262.34).
- c. The locations in which wastes will be accumulated will be discussed. This should discuss whether these are 90/180 day accumulation areas, satellite accumulation points, or permitted storage areas. Preferably a map indicating the precise location should be included (40 CFR 262.34).
- d. Inspection requirements. This should discuss what will be inspected, how often it will be inspected, who will conduct the inspection, what the inspection log will contain, and where the inspection records will be retained (40 CFR 262.34, 40 CFR 265.174, and 40 CFR 265.195).
- e. Contingency Planning. Large quantity generators are required to have a contingency plan. Small quantity generators are required to post certain information (40 CFR 262.34 and 40 CFR 265 Subparts C and D).
- f. Marking requirements. This should discuss what type of hazardous waste markings are to be utilized during accumulation (40 CFR 262.32).
- g. Container types. Types of containers used to accumulate hazardous wastes should be identified. Compatibility with the waste being stored should be considered as well as whether the containers will meet packaging requirements for off-site transport (49 CFR 171.178).
- h. Treatment requirements. How will wastes be treated to meet land disposal restrictions (40 CFR 268.40). If elementary neutralization is being performed to render waste non-hazardous, as statement should be included which indicates the activity is being performed under a permit exclusion (40 CFR 270.1(c)(2)(v)).
- i. Disposal requirements. This should discuss whether wastes and/or treatment residues will be disposed in a Subtitle C, hazardous waste disposal facility or in a Subtitle D, nonhazardous waste facility.
- j. Proposed treatment, storage, or disposal facilities (TSDFs). This should provide the name, address, telephone number, and EPA ID number of the TSDFs proposed to be utilized for the waste.
- k. LDR forms, if required. This should provide copies of the LDR forms from the proposed receiving facilities.

<b><i>Hazardous Material</i></b>				
ACM	1500 cyds	XYZ Landfill	Abatement by XXX Abatement Co., transported to landfill by XXX Transport	
PCB Ballasts			Stored in drums provided by Ft. Lewis hazmat office at location building XYZ	
Flourescent Lamps				
Mercury Switches				
Ozone-Depleting Substances				
Lo-level Rad elements				
Etc.				
Etc.				

# Hazardous Waste Management Plan 2006



**Joint Readiness Training Center  
and Fort Polk  
Fort Polk, Louisiana**

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# **SECTION ONE**

## **Introduction**

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### **1.1 PURPOSE**

The purpose of this plan is to identify the requirements for the storage, handling, and disposal of hazardous waste (HW) on Fort Polk from the point of generation to the point of disposal. These guidelines are in accordance with Army Regulation 200-1 (Environmental Protection and Enhancement), the Louisiana Administrative Code, and the Resource Conservation Recovery Act (RCRA), as amended. In the event that any of the provisions contained in this plan are superseded or otherwise modified by changes to the Code of Federal Regulations (CFR), or the Louisiana Administrative Code (LAC), the CFR and LAC shall take precedence over this plan.

### **1.2 APPLICABILITY**

This plan applies to all persons, units, and activities assigned, attached, stationed, or training at the Joint Readiness Training Center (JRTC) and Fort Polk. This includes all active duty or reserve military, contractors, and other civilians.

## SECTION TWO

## Installation and Regulatory Overview

### 2.1 GENERAL

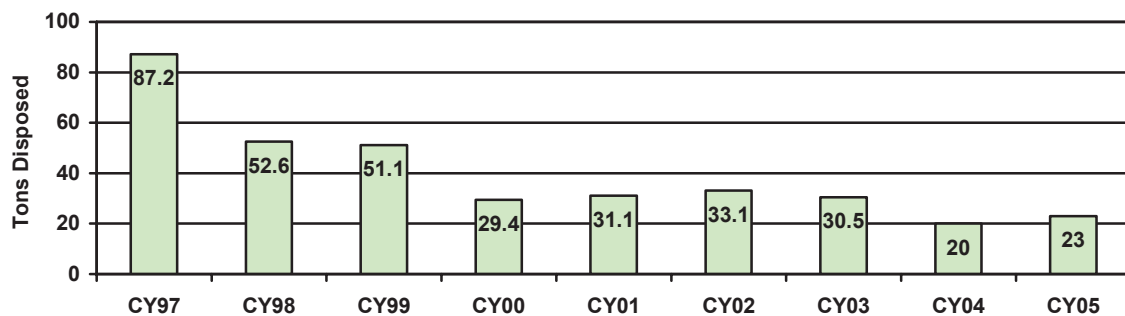
Fort Polk was established in 1941, and is located in west central Louisiana approximately 10 miles southeast of the city of Leesville in Vernon Parish. The main post consists of approximately 200,000 acres and is divided into two cantonment areas, South Fort and North Fort. Approximately 98,000 acres of the main post are within the Kisatchie National Forest and are used by Fort Polk under an agreement with the U.S. Forest Service. Other lands associated with Fort Polk, but not contiguous to the main post area, include the Peason Ridge Training Area, Toledo Bend Recreational Area, and the Intermediate Staging Base (ISB) at England Air Park in Alexandria LA.

### 2.2 REGULATORS

The primary regulatory agency for HW at Fort Polk is the Louisiana Department of Environmental Quality (LDEQ) located in Baton Rouge, Louisiana. The Environmental Protection Agency (EPA) Region VI provides oversight to LDEQ. Both agencies have the authority to inspect and direct enforcement actions against the installation. HW activities at Fort Polk must comply with both the 33 LAC Part V and 40 CFR Parts 260-268, 273, and 279.

### 2.3 HW GENERATOR STATUS

Fort Polk is a large quantity generator. As shown in the chart below, HW generation has decreased significantly over the last several years due to better education of individual generators on the post, improved business practices, and implementation of pollution prevention practices and equipment.



## SECTION TWO

## Installation and Regulatory Overview

### 2.4 PERMIT

Fort Polk is not permitted to store HW , therefore, all HW is disposed from the installation within 90 days of its generation. Some operations conducted by the 705th Explosive Ordnance Detachment (EOD) at the EOD Range are regulated as the treatment of explosive HW (open burning and open detonation or OB/OD). This treatment is permitted by the LDEQ and EPA Region VI under Subpart X permit number LA0214022725 (effective 2 June 1995). A renewal for this permit was submitted to LDEQ in November 2004. Until approval is received from the LDEQ, the EOD range is operated in accordance with the previous permit.

### 2.5 EPA IDENTIFICATION (ID) NUMBER

RCRA HW generated at Fort Polk is manifested under EPA ID number LA0214022725. Any RCRA HW that is generated at the ISB is manifested under EPA ID number LAR000014324.

### 2.6 90-DAY HW STORAGE SITES

Fort Polk has two less than 90-day HW Storage Sites. Both sites are owned and operated by the Directorate of Public Works, Environmental and Natural Resources Management Division, Compliance Management Branch (DPW-ENRMD-CMB). If no longer needed for operation at any future time, these sites will be closed per the requirements of 40 CFR 264.112 and 40 CFR 1102.

The primary HW storage site is building 4053 located at the Defense Reutilization Marketing Office Fort Polk (DRMO-Polk). Serves as the point where most of the installation's hazardous waste is stored prior to disposal off-site.



## SECTION TWO

## Installation and Regulatory Overview

The second HW storage site is located within the HAZMART Complex, building 4369, on North Carolina Street. It is also managed by the DPW-ENRMD-CMB.





## SECTION THREE

## Responsibilities

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### 3.1 GENERAL

HW responsibilities for the following positions, titles, or organizations are described below.

### 3.2 INSTALLATION COMMANDER AND GARRISON COMMANDER

- Ensure that Fort Polk is compliant with all applicable environmental laws and regulations.
- Establish an organizational structure to plan, execute and monitor HW programs.
- Program and budget for the necessary funds and personnel in order to execute a HW program and to comply with the applicable state and federal regulations.
- Sign RCRA permit applications, compliance agreements, consent orders, and responses to Notices of Violation (NOV) with the state and federal regulatory officials, following review by the installation SJA, installation environmental compliance officers, and the installation Resource Manager.
- Delegate the preparation and signature of all shipping manifests required by federal and state law to the Director of Public Works.
- Serve as the chairman of the Environmental Quality Control Committee (EQCC) which meets quarterly to discuss and oversee pertinent environmental issues. The function of the EQCC is to:
  - a. Resolve installation recycling and disposal program issues related to hazardous material and waste;
  - b. Resolve installation HW responsibility conflicts;
  - c. Review hazardous material purchases to minimize, substitute, or conserve hazardous materials;
  - d. Recommend hazardous material management changes related to health, safety, or environmental considerations.

## **SECTION THREE**

## **Responsibilities**

---

### **3.3 MAJOR SUBORDINATE COMMANDERS, UNIT COMMANDERS, AND ACTIVITY DIRECTORS**

- Provide command emphasis to ensure that all subordinates comply with HW regulations.
- Ensure annual environmental training (including a mock spill) is placed on the calendar and all soldiers/civilian personnel participate.
- Appoint an Environmental Compliance Officer (ECO) and an alternate ECO on appropriate orders to act as point of contact for environmental concerns. Commanders and supervisors will ensure that all ECOs and alternate ECOs have successfully completed the ECO Certification Course, are appointed on orders, and successfully complete the annual refresher course.

### **3.4 ECOs**

- Administer the environmental pollution control program in their organizations.
- Advise their commander/supervisor on matters related to implementation of this regulation and develop/maintain an SOP for waste management and spill contingency plans.
- Ensure that hazard warnings are posted, containers are properly marked, and containers are kept closed when not in use.
- Ensure motor pools are inspected monthly.
- Ensure weekly inspections are conducted of general oil/water separator condition by checking the sediment trap, "T" pipe section, main body, and drain-through.
- Notify the Fire Department of all spills in accordance with the Fort Polk Installation Spill Contingency Plan.

## SECTION THREE

## Responsibilities

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- Ensure that those who manage Satellite Accumulation Points (SAPs) and HW storage sites, as well as those who are occupationally exposed to or who handle HW receive training in accordance with Section 8.0 of this plan.
- Publicize policies and procedures to ensure an effective environmental program.
- Coordinate with the DPW-ENRMD-CMB for analysis of unknown wastes or any material suspected to be a HW, as needed.
- Maintain necessary spill response supplies and equipment.
- Ensure wastes are properly segregated to prevent commingling of wastes.
- Ensure SAPs are inspected at least weekly and ensure that remedial action is initiated for leaks, spills, or improper accumulation. Also, ensure that containers maintain six inches of freeboard during accumulation. Inspections should be documented per the guidance of Section 9.0.
- Ensure HW is placed in proper containers, and that accumulation dates are annotated when required.
- Oversee SAPS to ensure that containers are properly marked and that the total volume of HW does not exceed 55 gallons of HW, or 1 quart of acutely HW
- Ensure that HW accumulated at a SAP is transferred to a 90-Day HW Storage Site within 72 hours after reaching the 55-gallon limit.
- Coordinate HW management questions or issues with the assigned Environmental Compliance Service Technician (ECST), who works for the DPW-ENRMD-CMB.
- Ensure hazardous material inventories (HMI) are submitted quarterly to the assigned ECST.
- Ensure all hazardous material storage and HW accumulation sites have a site specific spill contingency plan.

## **SECTION THREE**

## **Responsibilities**

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### **3.5 DIRECTOR OF PUBLIC WORKS**

- Serves as the Installation HW Manager (IHW) in accordance with Army Regulation 200-1.
- Delegates the responsibilities of the IHW to the DPW-ENRMD-CMB.

### **3.6 DPW-ENRMD-CMB**

- Develops and implements an overall HW Management Plan for the installation, which includes guidance to all activities for the proper handling of HW.
- Assists organizations in developing environmentally safe procedures for handling, managing, and storing all hazardous material and HW.
- Coordinates the submittal of all permits, manifests, audits, checklists, reports, plans, and payments of fines or fees as required by DoD, Army, state, and federal regulatory agencies.
- Signs manifests as delegated by the Garrison Commander.
- Coordinates for laboratory analysis of HW as needed.
- Inspects unit/activity areas on a random and routine basis to ensure compliance with state and federal regulations.
- Provides environmental and HW training to installation personnel in accordance Section 8.0 of this plan.
- Manages records of hazardous and non-regulated waste disposed through DRMO, and submits these disposal records and associated costs for each unit to the installation finance office monthly.
- Ensures HW is properly packaged, labeled and documentation is complete prior to transfer to DRMO.

## SECTION THREE

## Responsibilities

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- Assists DRMO when HW contractors are packing and shipping HW items to ensure compliance with all HW and transportation regulations.
- Coordinates with DRMO as necessary on HW disposal issues.
- Coordinates with the SJA on environmental and HW issues as necessary.

### 3.7 DEFENSE REUTILIZATION AND MARKETING OFFICE FORT POLK (DRMO-POLK)

- Provides prompt and thorough customer service to all Fort Polk activities in support of the JRTC & Fort Polk mission.
- Provides written and verbal guidance to DPW-ENRMD-CMB on proper packaging of HW.
- Assists DPW-ENRMD-CMB in the proper completion of all turn-in documents, including the DD form 1348-1A and DRMS form 1930.
- Ensures appropriate HW manifests are prepared for HW in accordance with Department of Transportation (DOT), LDEQ and EPA requirements for transportation and disposal, respectively.
- Properly maintains all HW manifests, land disposal forms, and other associated documentation for all HW shipped through DRMO. Promptly provides documentation to the DPW-ENRMD-CMB when requested.
- Maintains records of any analytical testing performed by DRMO agents and all other HW documents and records for 3 years.
- Accepts non-RCRA (or non-hazardous) wastes for disposal.
- Ensures a reference copy of DOD Manual 4160.21-M (Defense Utilization and Disposal) is available. This manual provides detailed information on the responsibilities and functions of the DRMO.
- Notifies that the DPW-ENRMD-CMB of current hazardous material inventory stored at the DRMO on a quarterly basis.

## SECTION THREE

## Responsibilities

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- Prohibits deliveries of HW and hazardous materials from off-post activities.
- Ensures that DRMO personnel are trained, and receive proper job titles and job descriptions to reflect hazardous waste duties IAW the DRMO HW Training Plan and pursuant to DLA and DRMS guidelines.
- Ensures adequate staffing at the DRMO to allow for timely acceptance and processing of HW.
- Ensures that hazardous materials designated for reuse/resale are stored in an environmentally safe manner.
- With approval from the IHWM, accepts accountability of HW in-place when needed.
- Disposes of HW within 90 days of a waste's accumulation start date.
- Assumes accountability and possession of most HW for disposal from all Fort Polk activities (host, tenant, rotating units and some contractors). HW will be properly identified, contained and labeled IAW AR 200-1 and 40 CFR 260-269.

### 3.8 DIRECTORATE OF LOGISTICS (DOL)

- Works with DPW-ENRMD-CMB on ideas and procedures to track hazardous material procurement and issue within DOL and on the installation. This is necessary to ensure progress towards federal and Army HW minimization goals and requirements, pursuant to AR 200-1.
- Actively supports Fort Polk activities in measuring progress towards federal, state, and Army waste reduction goals and requirements.
- Blocks procurement of materials banned by the EQCC and the DPW-ENRMD-CMB within the installation/military supply system. The national stock numbers (NSNs) of the banned materials are provided by the EQCC and DPW for applicable items.

## **SECTION THREE**

## **Responsibilities**

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- Supports affirmative procurement (buying products with recycled content) when maintenance specifications allow their use.

### **3.9 ALL SUPERVISORS**

- Enforce proper workplace procedures and practices
- Ensure that necessary personal protective equipment, such as respiratory devices, clothing, head protection and other appropriate gear are properly maintained and used.
- Ensure that a primary and an alternate ECO are assigned on orders and complete the current 40-hour ECO course (administered by the DPW-ENRMD-CMB). ECOs certification must be maintained annually.

## **SECTION FOUR**

## **HW Identification and Classification**

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HW identification and classification is conducted according to the guidance of 40 CFR 261.



## **SECTION FIVE**

## **Standards for Hazardous Waste Accumulation**

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### **5.1 SATELLITE ACCUMULATION POINTS (SAP).**

A SAP shall be located at or near the area where the waste is generated and shall be under the direct control of the operator. The following criteria will be followed when using a SAP.

A maximum of 55 gallons of waste (or 1 quart of acutely toxic waste) shall be accumulated at any SAP. The maximum quantity is the total of all HW at the SAP, not for each individual waste stream. Once a maximum of 55 gallons of hazardous waste has been accumulated at a SAP, the container(s) must be marked with the date. The container(s) must then be transferred from the SAP to a 90-Day HW Storage Site within 72 hours (or 3 working days).

All containers must be in good condition. If the containers leak, the waste must be transferred to another container or over packed. The containers will be compatible with the waste. For example, acid cannot be accumulated in metal drums. Containers will remain closed at all times, except when it is necessary to add or remove waste from the container. For a container with a funnel or funnel device (needed all the time) to be considered a "closed container," the funnel must have a lid and latching/locking mechanism to secure it when waste is not being poured or added to the container.

All spills or releases will be cleaned up immediately. Containers shall not be overfilled. A container will be considered full when the liquid is within 6 inches from the top. This allows for expansion of liquid wastes resulting from temperature fluctuations and prevents overflowing. All containers will be marked with the words "HAZARDOUS WASTE" and the common name of the contents (i.e. Waste Paint). ECOs will ensure that all containers are closed, not leaking, and all spills or releases are properly cleaned up.

The SAP will be inspected weekly using the inspection form located in Appendix H. An inspection log will be maintained at the SAP by the supervisor stating the date and time the SAP was evaluated or inspected, the initials or name of the inspector, the condition of the containers, amount of HW accumulated, and corrective action taken if found to be out of compliance with this plan.

Adequate spill control and containment material will be on hand to contain and clean up minor spills.

SAPs will have a containment system that is impervious, and with sufficient capacity (to contain 110% of the largest container or the volume of all containers combined which ever is

## SECTION FIVE

## Standards for Hazardous Waste Accumulation

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greater). Lined or unlined sandbag dikes and asphalt pavements are not acceptable unless a berm around it is constructed in a manner which would prevent migration of a spill or leak. SAPs will not be located near storm drains, sewer drains, or wash racks. Wash racks with oil/water separators do not serve as secondary containment. Oil/water separators are designed to capture oil residue but not spills. Signs prohibiting smoking in or near all SAPs shall be posted. SAPs shall be located in areas protected from the elements and in facilities that will not allow rainwater to collect. If rainwater has collected, unit ECOs should inspect for contamination (sheen or discoloration), if the water is not contaminated drain it and log it in your discharge log (Appendix S). A discharge log must be maintained for each release of water from the SAP to show that it was inspected for contamination prior to discharge. If the water is contaminated contact your ECST for further guidance.

### 5.2 90-DAY HW STORAGE SITES

DPW-ENRMD-CMB has the only approved less than 90-Day HW storage sites on Fort Polk as described in Section 2.0. These storage sites are areas where any quantity of HW may accumulate for no more than 90 days. The following criteria will be followed when using a 90-day HW Storage Site.

#### 5.2.1 Accumulation Containers in a 90-Day Storage Site

The required HW label or markings must be placed on the container prior to the addition of the first drop of HW. Labels or markings must be easily visible for inspection. The accumulation start date on the label or drum should correspond to the date when the first drop of waste is added. Regardless of quantity, the container must be removed from the installation via the DRMO prior to 90 days of the start date.

#### 5.2.2 Placement of Full Containers into a 90-day Storage Site

Once a container from a SAP has been dated and transferred (within three days), to a 90-Day HW storage site, the site manager has up to 90 days from the date the drum was dated to have the container removed from the site. Typical business practice at Fort Polk is to process waste items for disposal monthly. Most wastes leave the installation when they are 30-45 days old.

All containers must be kept in good condition. If the container leaks, the waste will be transferred to another container or over packed. The containers will be compatible with the

## SECTION FIVE

## Standards for Hazardous Waste Accumulation

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waste. All containers will be closed at all times, except when it is necessary to add or remove waste from the container. All funnels or funnel devices will be fitted with a lid and will securely seal to the drum. All spills or releases will be cleaned up immediately. Containers will not be overfilled. A container will be considered full when the liquid is within 6 inches from the top.

As a minimum, all containers will be marked with the words “HAZARDOUS WASTE,” the chemical/technical name (if applicable) or the common name for the waste (i.e. mixed paint), and the storage start date.

Federal and state regulations require only weekly inspections, the 90-Day HW Storage Sites at Fort Polk typically undergo daily inspections as extra assurance that HW storage/disposal procedures are occurring IAW with all applicable requirements.

A log will be maintained on site with the following minimum information

- a. Date received into the 90-Day HW Storage Site
- b. Description or name of the container
- c. Quantity, size, and type of container
- d. Date the HW was removed for disposal and the method of disposal (i.e., “to DRMO”). After turn-in to DRMO, the DD Form 1348-1A document number for the waste removed from the 90-Day HW Storage Site is entered into the 90-Day building logbook. This tracking number enables correlation to another book of records, which indicate more information about the waste.

Adequate spill control and containment material will be on hand to contain and clean up minor releases.

Signs (as follows here) will be posted so they are visible from all sides of the storage site: “HAZARDOUS WASTE STORAGE POINT – AUTHORIZED PERSONNEL ONLY” and “NO SMOKING WITHIN 50 FEET”.

90-day HW Storage Sites will be located in areas protected from the elements, and in facilities which will not allow rainwater to collect. If rainwater is collected, it will be evaluated by the IHWM for the proper disposal.

## **SECTION FIVE**

### **Standards for Hazardous Waste Accumulation**

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Containers holding ignitable or reactive waste will be located at least 50 feet from the installation property line.

Incompatible wastes must not be placed in the same container or stored near each other unless over packed, or stored in different areas where they could not leak or cause adverse effects to the other. Incompatibility will be checked using the Incompatibility Chart at Appendix B.

Each 90-Day HW Storage Site will have a Site Specific Contingency Plan on site.

An emergency communication device or an emergency alarm system will be accessible to minimize the impact of a fire, explosion, or any unplanned, sudden release of HW. HW personnel at the HAZMART 90-Day HW Storage Site rely on cellular phones and verbal warnings to meet this requirement. The DRMO site uses two-way radios and verbal warnings to meet this requirement.

Portable fire extinguishers or fire control equipment appropriate for the waste being accumulated will be located within 50 feet of the storage point.

All personnel handling HW or petroleum products must receive proper and adequate training (see Section 8.0, Training).

## **SECTION SIX**

## **HW Disposal Procedures**

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### **6.1 GENERAL**

DRMO is the primary method of disposal for HW generated by units and activities on Fort Polk. Alternate means of disposal may be used at the discretion of the IHWM. It is important that all HW disposal through DRMO be accomplished as quickly as possible to minimize liability for environmental violations or spills.

### **6.2 HW GENERATED BY CONTRACTORS PERFORMING WORK ON FORT POLK**

In some cases, contractors performing work on the installation will be required to arrange for direct disposal of HW generated as a result of their operations, and will not dispose waste through DRMO. The IHWM and other government representatives involved in these contracts will clarify these circumstances when necessary. All other visiting, home-based, or tenant organizations on Fort Polk dispose HW through the DPW-ENRMD-CMB and DRMO.

### **6.3 SCREENING OF “GOOD CONDITION” ITEMS**

When a unit or activity wishes to discard excess hazardous materials which are unopened and/or are in good condition, the activity or their ECST will bring the items to the HAZMART (building 4369) for evaluation. If possible, items will be added to the HAZMART’s free-issue inventory, and HW costs and liability are avoided. Items with expired shelf life will be researched by HAZMART personnel and extended when possible. If the item(s) cannot be used or reissued through the HAZMART and cannot be returned to the manufacturer, the HW technicians will consult with DRMO.

### **6.4 DRMO REVIEW OF EXCESS HAZARDOUS MATERIALS**

If an item is in good condition but cannot be reissued through the HAZMART, the HW technicians will consult with DRMO to determine if the item can be donated or sold to another government activity, or offered for outside sale. If this is not possible, the item will be processed for waste disposal by the HW technicians.

### **6.5 PREPARATION FOR DISPOSAL AND PACKAGING**

The ECSTs are responsible for monitoring unit SAPs and coordinating with the unit about waste generation activities. When waste is accumulated, the generating unit or ECST will

## SECTION SIX

## HW Disposal Procedures

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package the item in the proper container, or they will consult with the HW technicians. The HW technicians will ensure that the proper container is used, and that the container has the proper markings and labels.

### 6.6 CONTAINER/DISPOSAL COSTS

All container, packaging, and disposal costs are paid by the generating unit. Container and disposal costs are tracked closely by DPW-ENRMD-CMB. A waste disposal summary report and a budget report are prepared by DPW-ENRMD-CMB and submitted monthly to the installation budget office.

DOT/UN approved containers, vermiculite, and labels are available from DPW-ENRMD-CMB, and are supplied to the units (on a reimbursable basis) by the ECST as needed.

### 6.7 RECURRING WASTE STREAMS

If the wastes requiring disposal are recurring waste streams and have already been profiled, the ECST or HW technicians will oversee its proper packing, and store the waste in the HAZMART 90-Day HW Storage Site to await transfer to DRMO. At the time any HW is placed in the 90-day HW Storage Site, the ECST will coordinate with the HW technicians to ensure waste containers are properly labeled and meet any other packaging requirements. In the event that the HW technicians are not available, the ECSTs have been trained to ensure waste containers are properly labeled and logged into the 90-Day HW Storage Site logbook.

### 6.8 NON-RECURRING WASTE STREAMS

If the wastes are not recurring waste streams, information about the waste is coordinated first with the HW technicians (and the IHWM as necessary). Wastes are usually profiled based on information from the Material Safety Data Sheet (MSDS) or laboratory analyses. If waste ingredients or chemical properties are unknown, items will be characterized prior to disposal. See Section 7.0 for information about Fort Folk's HW Analysis Plan.

### 6.9 STABLE AND UNSTABLE HW

When the HW can be safely transported, it will be transferred by the activity, the ECST or the HW technicians to the HAZMART or DRMO 90-Day HW Storage Sites. When the HW cannot be safely transported in its original or accumulation container, the ECST, HW

## SECTION SIX

## HW Disposal Procedures

technicians, or IHWM will inspect the item(s) at the generator's site, and will provide guidance for proper handling and disposal. Any wastes or unknown containers which appear to pose a potential threat will not be handled until Fort Folk's Hazardous Material Emergency Response Team (Fire Department) is consulted.

### 6.10 WASTE DETERMINATION & PROFILING BUILDING

Waste items which require evaluation or research to determine proper disposal will either remain in the generator's area, or may be placed in the HAZMART's waste determination building while the necessary testing or evaluation actions take place. All items placed in the HAZMART's waste determination building are entered into a logbook. When determinations have been made, items are processed as required for proper disposal.

### 6.11 MOVEMENT INTO 90-DAY BUILDING

When items have been properly profiled and packaged, they are moved from the waste determination/profiling building to the appropriate storage area. If a HW, the waste is moved to the HAZMART's 90-Day HW Storage Site (building S7). If a universal or non-regulated waste, it is moved to the HAZMART's Universal Waste/Non-Regulated building (building S8).

### 6.12 DOCUMENTATION

The HW technicians will complete the necessary documentation required for disposal of the HW to DRMO. In some cases, a profile sheet, supporting documentation, and a DD form 1348-1A will be required. For recurring waste streams whose profiles are already on file, a DD form 1348-1A is all that is required. Details about management of the waste profile procedures are provided below. An example of the profile sheet form and the DRMO turn-in document (DD Form 1348-1A) are shown in Appendix D.

- a. DD Form 1348-1A only. When only a 1348-1A is required, the HW technicians will assign a unique document number from the HAZMART document register to the completed 1348-1A. This document number will track the waste from the time of transfer to DRMO, throughout shipment off the installation, to the time when it arrives for final treatment or disposal at the HW disposal facility. Because master profile books are maintained both at the HAZMART and at DRMO the assigned profile number is all that is



## SECTION SIX

## HW Disposal Procedures

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needed on the 1348-1A to enable DRMO or the HW technicians to refer back to the profile sheet and corresponding MSDS or laboratory analysis results for that waste.

- b. Waste Profile Sheets, Supporting Documentation, and DD Form 1348-1A. If the waste item has not been disposed before, proper profiling will take place using chemical information from the Material Safety Data Sheet, results from laboratory analysis, chemical dictionary, or other source. Waste profiles are prepared and reviewed by HW technicians who have proper training for this task. In the event of questions, the HW technicians consult with the IHWM. For these waste items, the completed waste profile sheet, the MSDS/laboratory results, and the DD Form 1348-1A is required for the files. A second copy of the profile is taken to DRMO with the waste. A new profile number is assigned to both profile copies at the time the waste is accepted by DRMO, and each profile is filed in the master profile books at DRMO and the HAZMART.

### 6.13 PACKAGING

Proper DOT/UN approved packaging will be used for all HW per 49 CFR 170-189. The HW DRMO contractor will ensure all requirements are met during final shipment off the installation, a CMB representative will oversee this process.

### 6.14 MARKINGS

Each HW container will be marked as described earlier in Section 5.0, paragraph 5.2.9.

### 6.15 TRANSPORTATION OF HW

When the proper packaging, marking, labeling, and documentation have been completed, the ECST or HW technicians will transport the HW containers to DRMO. All HW will be transported using a military or government vehicle only, and never in a privately owned vehicle (POV). When ready for disposal, it is generally transported by the HW technicians using the route outlined in Appendix E. Some items are signed for in-place such as cylinders, fluorescent lamps, and some batteries.



## SECTION SIX

## HW Disposal Procedures

### 6.16 BJACH PREPARATIONS

BJACH prepares their own packaging for waste items, and will transport their own waste items to the HAZMART 90-day site. The HW technicians will prepare turn-in paperwork and inspect waste items and containers for proper packaging.

### 6.17 OFF-SITE SHIPMENT OF HW AND MANIFESTS

At the time of shipment by the DRMO HW disposal contractor, the HW technicians will oversee all packing and preparation activities with the DRMO environmental representative to ensure proper procedures. HW manifests will be reviewed prior to the shipment day by both the DRMO representative and the IHWM (or designated office representative) to ensure accuracy and to ensure compliance with RCRA and DOT regulations. A government representative from the installation environmental office (DPW-ENRMD-CMB) will sign all manifests and other related paperwork in addition to the DRMO government representative. Authority for the DPW-ENRMD-CMB government representative to sign HW manifests is delegated by the installation or garrison commander as indicated in Section 3.0, Responsibilities).

### 6.19 RECORDKEEPING

All DD 1348-1A forms, DRMO delivery orders, and related HW or non-hazardous manifests are retained after each shipment by the DRMO, the installation environmental office, and the BJACH environmental representative. All DD 1348-1A forms are also filed in the DPW document register (maintained at the HAZMART) after each turn-in to DRMO.

### 6.20 ANNUAL HW REPORT

As required by the Louisiana Department of Environmental Quality (LDEQ), an annual report is submitted by the installation environmental office based on HW disposal records for each calendar year by 1 March. These reports are forwarded by the LDEQ to the U.S. Environmental Protection Agency Region VI biennially in accordance with federal HW regulations.

## **SECTION SEVEN**

## **HW Analysis Plan**

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### **7.1 GENERAL**

The chemical and physical information of a waste must be determined before waste disposal decisions can be made. The necessary information is obtained either through user knowledge (MSDS or other manufacturer information), or through laboratory analysis or measurement of certain properties. If a laboratory characterization test is required, a sample of the waste will be submitted to the installation environmental laboratory (managed by DPW-ENRMD-CMB) for necessary tests by the generating unit's ECST or the HW technicians. The ECST or HW technicians will determine the extent of testing. When necessary, the IHWM is consulted.

### **7.2 ANALYSIS COST**

If testing can be performed by the Fort Polk environmental laboratory, there is no cost to the generating unit for the test(s) since operational costs for the environmental laboratory are funded annually by IMCOM. Analyses which must be performed off the installation are first processed through the Fort Polk environmental laboratory, and then contracted out to an in-state certified laboratory. Government credit card data is obtained from the generating unit by the ECST or HW technicians to pay for the necessary analyses.

### **7.3 CHAIN-OF-CUSTODY FORMS**

Chain-of-Custody forms (Appendix F) are used for all samples processed. The environmental laboratory receives all samples using these forms and assigns a unique sample number (from a logbook) to each sample. When laboratory results are available, the sampler/point of contact is contacted with lab results.

### **7.4 RESULTS**

When laboratory results indicate HW characteristics, the waste is processed by the HW technicians and transferred to DRMO for storage and disposal per Section 6, HW Disposal Procedures.

### **7.5 ANNUAL CHARACTERIZATIONS**

Waste streams that are generated on a recurring basis each year are characterized annually, or when changes occur in the process. These annual characterizations and their results are

## SECTION SEVEN

## HW Analysis Plan

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reviewed by the IHWM. Non-recurring waste streams are analyzed if required and profiled as they are generated.

### 7.6 UNKNOWN WASTES

Unknown wastes are discovered on the installation from time to time. When this occurs, the contents of these containers or “orphan drums” are analyzed to determine if HW characteristics exist. Based on lab results, DPW-ENRMD-CMB makes the determination for safely moving these containers to a 90-Say HW Storage Site if HW characteristics are detected. The Fort Polk Hazmat Emergency Response Team (Fire Department) responds to a “orphan drum or container” in emergencies or when potential risk is suspected.

## SECTION EIGHT

## Training

### 8.1 REQUIREMENTS

Training requirements vary depending upon the job description and duties assigned to an individual. The IHWM, DRMO personnel, and the 705<sup>th</sup> EOD personnel have very stringent training requirements, imposed by the state and federal regulations and higher headquarters.

Personnel in HW management roles (i.e., DRMO, ECSTs, and HW technicians) must receive the following training:

- a. Annual RCRA / HW management training per 40 CFR 262;
- b. Initial 40 hours of Hazardous Waste Operations training per 29 CFR 1910.1200, and 8-hours of refresher training annually;
- c. Training for packing and transportation of hazardous materials and wastes IAW 49 CFR 172-189 (DOT regulations) and DoD 4500.0-R (Defense Transportation Regulation, Part II, Cargo Movement). DoD 4500-R, Part II, Cargo Movement is included in Appendix G. \* DOT requires training every 3 years; DoD requires training every 2 years.

### 8.2 EOD RANGE PERSONNEL

Must be trained in accordance with 40 CFR 265.15 and the Subpart X Permit for OB/OD activities.

### 8.3 ECOs

The ECOs managing SAPs are required to successfully complete the ECO Certification Course within the first 90 days of being assigned these duties. The 40-hour ECO Certification Course is provided free of charge by the DPW-ENRMD-CMB and is conducted at the Environmental Compliance Training Center, Building 2521 (23rd Street near Mississippi Avenue). Registration and details can be obtained by calling 531-4910 or 531-7979. Untrained ECOs must work under the direct supervision of a trained ECO until they receive training. After completion of the ECO training, the individuals are able to perform their duties in compliance with the standards established in this course. ECOs must complete an 8-hour ECO Refresher course annually. The ECO Certification Course provides the following minimum information:

## SECTION EIGHT

## Training

- Safe operation of specific equipment in the SAP or HW facility
- Spill prevention and contingency plans
- Response to emergencies through established procedures, emergency equipment, and systems
- HW disposal procedures (including contaminated soil disposal)
- Annual mock spill training (see Appendix C)
- Handling, storage, and identification of DOT containers
- Use and care of respirators and other personal protective equipment
- Potential health hazards.
- Personnel and equipment decontamination.
- Records and reports.
- HW minimization and recycling programs.
- Environmental Compliance Inspections.
- Endangered Species, Cultural Resources, and Wetlands Protection
- Field Operations
- Training at the Unit Level

### 8.5 ON-THE-JOB (OJT) TRAINING

Personnel handling HW and working in the immediate area must work under a trained supervisor until he/she has completed the unit-level HW training requirements. Results must be recorded and signed by unit ECO certifying soldier or civilian as a HW handler in on-the-job (OJT) training packet. These records should consist of the following:

## SECTION EIGHT

## Training

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- The name and job title for each position at each site, and the date of appointment.
- A written job description for each position. This description must include the required skill, education, or other qualifications and duties of each position.
- A written description of the training required for each person employed or assigned to a site.
- Records documenting the training or job experience required. Individual training records must be kept for at least 3 years from the date the individual last worked at the site. A copy of individual training records may accompany personnel transferred within Fort Polk.

## **SECTION NINE**

## **HW Inspections**

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### **9.1 SATELLITE ACCUMULATION POINTS (SAP) AND 90-DAY STORAGE SITES**

SAP and 90-day storage site managers will conduct inspections at least weekly as required by 40 CFR 265.174/JRTC & Fort Polk Regulation 200-1, and record them on the inspection form contained in Appendix H. Any deficiencies will be corrected immediately or as soon as possible for larger problems.

### **9.2 ECOs**

ECOs will conduct other inspections of SAPs at periodic intervals in addition to the weekly inspections addition conducted by SAP managers. In many cases, the ECO and SAP Manager is the same person. The weekly and monthly ECO inspections should be conducted using the forms located in Appendices H and I.

### **9.3 ENVIRONMENTAL CUSTOMER SERVICE TECHNICIANS (ECSTs)**

The ECSTs will assist in conducting compliance inspections of unit/activity HW areas with the unit/activity ECO at least four times per year, and record results on the Appendix I checklist. ECSTs will provide guidance to the activity for correcting any deficiencies. Inspection reports will be forwarded through the unit or activity's chain of command.

## SECTION TEN

## HW and Universal Waste Management

### 10.1 GENERAL

The environmental personnel at the “8300 Block” or the Consolidated Solid Waste Collection Facility at North Fort Polk manage hazardous material and waste items which are left behind by rotational units, or pulled from the solid waste stream during sorting by the solid waste contractor. ENRMD manage universal wastes (batteries and fluorescent lamps) regularly, and also serve as a SAP for miscellaneous hazardous and non-hazardous items. Procedures for managing the wastes at the 8300 Block are described below.



### 10.2 LITHIUM BATTERIES

All rotational and home based units must dispose all lithium batteries at the 8300 Block for testing. Batteries with more than 70% of their life span left are shelved and reissued to units who need them, free of charge. If batteries have less than 70% life span, they are packaged for disposal as universal waste. Records of all batteries, generating unit, and actions taken are kept. When the shelf space for universal waste batteries fills up, the 8300 Block personnel provide an inventory of all universal waste lithium batteries to the HW technicians. These batteries remain in place until the DRMO HW contractor picks them up for disposal off the installation (every 4-6 weeks). While in storage, the batteries are labeled “Universal Waste,” their common name (i.e., batteries), and with their accumulation start date. They are stored in an indoor, secure area. More information about Fort Folk’s Lithium Battery Program is included in Appendix J.



### 10.3 OTHER BATTERIES

The installation participates in a free recycling program through the Rechargeable Battery Recycling Coalition (RBRC) for nickel metal hydride, lithium ion, nickel cadmium, and small sealed lead-acid batteries. The RBRC provides packaging materials and shipping labels for these batteries free of charge. The HW technicians at the HAZMART package these batteries and send them to RBRC for recycling on a periodic basis.



## SECTION TEN

## HW and Universal Waste Management

Batteries that exceed the size limitations of the RBRC or that are a type that they do not accept are managed as universal waste. Rotational units turn all batteries in to the 8300 block personnel for management and turn-in as universal waste to DRMO. Following each rotation, a list is provided by the 8300 Block personnel to the HW technicians who coordinate their disposal through DRMO. Home-based units may also turn their batteries in to the 8300 block or directly to the HAZMART for packaging. Each battery type is boxed separately as they await universal waste shipment. At the time of contractor pickup, each battery type is packed separately in DOT/UN approved containers. Batteries are labeled as “Universal Waste,” with their common name, and the date their accumulation began. They are stored in an indoor, secure area.

### 10.4 ALKALINE BATTERIES

Alkaline batteries may be disposed as solid waste and do not require special handling.

### 10.5 FLUORESCENT LAMPS

Fluorescent lamps at the 8300 Block are segregated from the field trash that is sorted by the installation solid waste contractor. HW technicians prepare the necessary documentation for disposal of lamps through DRMO. As described above, DRMO will sign for them in-place. They are labeled as “Universal Waste,” with their common name (i.e., lamps), and with the date their accumulation began. They are stored in a secured area, which is under cover from the weather.

### 10.6 ACCUMULATION DRUMS FOR AEROSOL PAINTS, PESTICIDES/ HERBICIDES, AND LUBRICANTS

All aerosol cans from units/activities are disposed at the 8300 Block by using an aerosol can puncher to remove the remaining contents of the cans. A separate can puncher and drum is used for paint, POL, and insecticides. When drums are  $\frac{3}{4}$  full, a sample of each drum is submitted to the environmental laboratory (by 8300 Block personnel) for TCLP analysis. Based on the results of these tests, the drums are properly profiled by the HW technicians and transferred to DRMO for disposal.



## SECTION TEN

## HW and Universal Waste Management

### 10.7 FLAMELESS RATION HEATERS (FRH) FROM MEALS-READY-TO-EAT (MRE)

Unused ration heaters have in the past been activated with water at the 8300 Block, and were then disposed as solid waste per an authorization letter from the LDEQ (see Appendix K). New guidance from EPA and LDEQ (see Appendix K) state that FRHs discarded by individuals are excluded from RCRA Subtitle C regulation under the household exclusion in 40 CFR 261.4(b)(1) and LAC 33:V.105.D.2.a. Units are encouraged to use/activate flameless ration heaters with food during training in the field. If FRHs stored in bulk, and require disposal they must be managed as hazardous waste.

### 10.8 MISCELLANEOUS ITEMS

When a rotation ends and hazardous materials are left at the 8300 Block for disposal, the environmental personnel compile a list of the items by name, NSN (if available), manufacturer, and quantity. As soon as possible, the list is then given the HW technicians who review the items, research and inspect the items, evaluate them for potential reuse, properly profile them, and remove them for disposal or reissue. All HW and non-regulated wastes disposed through DRMO are properly packaged and labeled, and turned into to DRMO for disposal with the appropriate documentation.

### 10.9 CLASS IV AND CLASS V

Class IV and Class V items (including replicated Class V) are often found mixed with rotational trash when it is sorted by the solid waste contractor. Class IV and replicated Class V are segregated, set aside and then are turned in at the Replicated Class IV/V Yard of North Fort at building 8105 daily. When authentic Class V is found larger than 50 caliber the sorting process will stop and EOD will be contacted to remove the item and properly dispose of it. Authentic Class V, 50 caliber and smaller will be signed for by the rotational unit daily. These items will be taken to the Ammunition Supply Point (ASP) or managed at the units Ammunition Holding Area (AHA).

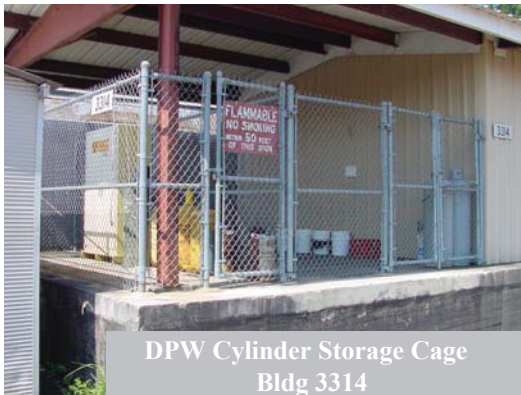
## SECTION ELEVEN

## Cylinders

The ECSTs and 8300 Block personnel provide feedback about empty or excess compressed gas or other cylinders which must be disposed from individual unit or activity areas. Types of cylinders disposed in the past include ammonia, oxygen, nitrogen, acetylene, butane, propane, engine starting fluid quick start ether (see Appendix L return to vender program), and fire extinguishers. When cylinders must be disposed from unit areas, the HW technicians coordinate with the ECSTs about types, quantities, and locations of the cylinders, prepare the necessary disposal documentation (see Section 6.0, HW Disposal Procedures), and coordinate with DRMO for their disposal. The DRMO rep, accompanied by the HW technician, will sign for these cylinders in-place. When moving the cylinders is feasible, they are stored in a secure outdoor cage (building 3314) near DPW headquarters (Texas Ave, near intersection of Louisiana/Texas Avenues) until pickup by the DRMO contractor.



DPW Cylinder Storage Cage  
 Bldg 3314



DPW Cylinder Storage Cage  
 Bldg 3314



DPW Cylinder Storage Cage  
 Bldg 3314

Propane cylinders are purged at the 8300 Block, valve stems removed, and a hole punched into the side of each to confirm empty contents. After these steps are completed, cylinders can then be disposed as scrap steel. The same method may apply to nitrogen gas cylinders. No other cylinder types are handled in this manner due to potential dangers for the other materials.

Any “unknown” cylinders the contents of which cannot be confirmed due to absence of outer markings are transferred to the DRMO cylinder contractor for analysis, with a follow-up charge later after contents are confirmed. Separate DD 1348-1A forms will be used for the analysis action and the disposal charge in these cases.

## SECTION ELEVEN

### Cylinders

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Empty refrigerant cylinders (non-refillable) are disposed through the HAZMART. After certifying them as empty and punching a hole in each cylinder, the DPW Air Conditioning Shop personnel turn them in to the HAZMART where they are crushed and turned in to DRMO for scrap metal recycling.

## SECTION TWELVE

## Installation Waste Stream Summary

### 12.1 GENERAL

HW, non-regulated wastes, universal wastes, and PCB wastes are handled regularly on the installation. A quick summary of some of the more common wastes is provided below.

### 12.2 HAZARDOUS WASTE

Common hazardous waste streams are:

- Expired NBC kits
- Aerosol Paints, Lubricants & Enamel Paints
- Paint and Paint Related Material from Paint Shops
- Flammable Stains/Coatings
- Cleaning Products
- Photographic Wastes
- Pesticides, Insecticides, Rodenticides, Herbicides
- Burn Propellant
- Smoke Pots
- Flammable Adhesives
- Lead-Contaminated Paint Chips/Debris
- Solvents (including parts washer solvent)
- Calcium Hypochlorite
- Gasoline Contaminated Rags, Soil, or Used Drysweep

### 12.3 NON-REGULATED WASTES

These wastes are not regulated as HW, but still required special handling and disposal actions to ensure that other regulations are not violated. Non-regulated wastes may be accumulated and stored in the same place as hazardous waste in a SAP, but non-regulated containers must be properly marked and labeled. Common non-regulated wastes on Fort Polk are:

- Oil, Fuel, and Grease Contaminated Rags and Debris
- All POL contaminated soils and used drysweep (except for gasoline)
- Grease
- Used Oil

## SECTION TWELVE

## Installation Waste Stream Summary

- Oil and Fuel Filters
- Used Antifreeze
- Brake/Transmission Fluid
- Asbestos
- Nonflammable Adhesives

### 12.4 UNIVERSAL WASTE

Universal wastes are certain wastes which must still be handled properly to avoid safety, health, or environmental problems. Because of their widespread use in industry and the government, they can be stored for a longer period of time than HW, and do not require shipment under a HW manifest. Universal wastes managed regularly at Fort Polk are batteries (all types except alkalines which can be discarded as solid waste), fluorescent lamps (broken and unbroken), mercury thermostats, mercury containing equipment, and certain pesticides. Also, LDEQ regulations allow antifreeze to be managed as a universal waste when it is being disposed.

### 12.5 RESTRICTED ITEMS

These are items that must be kept from regular garbage and dumpsters for safety and health reasons in addition to environmental reasons. The ECSTs frequently check all the dumpsters in units areas, and facilitate the proper disposal of any inappropriate items found dumpsters. Besides liquids and chemicals, the following items from the cantonment area or field are not permitted in regular garbage and dumpsters:

- Tires
- Ammunition (including blanks)
- Pyrotechnics
- Fluorescent Lamps
- Atwess Cartridges or Expended Atwess Cartridges
- Cylinders
- Metals
- Scrap Wood
- Contaminated Soil
- Radioactive Items



## **SECTION TWELVE**

## **Installation Waste Stream Summary**

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### **12.6 POLYCHLORINATED BIPHENYLS (PCBs)**

These are synthetic compounds which were widely used as a dielectric fluid in transformers and capacitors, in light ballasts, and for other insulating uses prior to 1978. They are not regulated by the Resource Conservation and Recovery Act (RCRA), but by the Toxic Substances Control Act (TSCA) and under 40 CFR 761. Storage and record keeping requirements apply to PCB waste as described in Section 16.0 of this plan.



## **SECTION THIRTEEN**

## **Universal Waste**

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Universal wastes on Fort Polk are handled per the guidance of 40 CFR 273, Standards for Universal Waste Management. Universal wastes managed regularly on Fort Polk are batteries and fluorescent lamps. All lithium batteries on Fort Polk are managed by the environmental personnel at the Consolidated Solid Waste Collection Facility (8300 Block, North Fort) as described in Section 10.0.

All other batteries discarded after a training rotation by visiting units are managed at the above facility as well as described in Section 10.0. While in storage as universal waste, batteries or containers are labeled with the words "Universal Waste," the common name (i.e. nicad batteries), and the date it was placed in storage. Excluding lithium batteries, all other batteries on Fort Polk (from home-based units) are managed by the HW technicians using the procedures of Section 6.0. While in storage, they are labeled as described in paragraph 13.4 above.

Any fluorescent lamps turned in for disposal by North Fort buildings or found in the garbage are managed at the North Fort area described in Section 10.0. While in storage as universal waste, lamps or containers holding them are labeled with the words "Universal Waste," the common name (i.e. lamps), and the date they were placed in storage. Broken and unbroken lamps are managed for disposal as universal waste.

Spent fluorescent lamps from the North and South Fort cantonment areas are turned in at the Graybar self-help stores. These self-help stores are located on South Fort Polk for postwide exchange of old fluorescent lamps for new ones. The DPW-ENRMD-CMB works with store operators to ensure they are storing and disposing of lamps properly and per the standards cited in this document and 40 CFR 273. All spent lamps collected at these sites are recycled through a DRMO contractor.

The HAZMART and HW technicians collect and manage any additional lamps which may be turned in at the HAZMART instead of to the self-help stores. When necessary, these lamps are managed at the HAZMART per the universal waste standards cited on this page.



## **SECTION FOURTEEN**

### **Medical Waste**

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All medical waste is managed through Bayne Jones Army Community Hospital (BJACH). Some expired or excess supplies are disposed through DRMO by a BJACH designated representative. Many of BJACH's expired pharmaceuticals can be returned to the vendor as outlined in the guidance in Appendix M.

All questions or issues related to biological agents (such as Anthrax) are handled by BJACH and the military police.

## **SECTION FIFTEEN**

## **Radioactive Waste**

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The Fort Polk Directorate of Safety (531-2752) is the post contact which provides guidance for the handling of radioactive items, or any that are suspected to be radioactive.

## SECTION SIXTEEN

## Polychlorinated Biphenyls (PCBs)

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### 16.1 GENERAL

PCBs are regulated under TSCA not RCRA. PCBs are synthetic compounds that were commonly used in the past as insulating materials in electrical capacitors, in transformer dielectric fluid, as plasticizers in waxes, in paper manufacturing, and many other applications. PCBs are very persistent and remain in the environment for a long period of time. EPA Region VI has primacy for the enforcement of TSCA in Louisiana. Fort Folk's EPA ID number LA 021402275 is used for all manifests of PCB wastes.

### 16.2 IDENTIFICATION OF COMMON PCB WASTE

All materials commonly manufactured with PCBs in the past are still considered to contain PCBs unless testing is feasible, or unless the equipment or item is marked by the manufacturer to indicate "no PCBs" or "non-PCB".

A DRMO contractor accepts suspected or known PCB transformers for disposal in two categories described below:

- a. PCB contaminated: contain 50 to 500 ppm PCBs
- b. PCB transformers: contain 500 ppm or greater PCBs

Light ballasts or capacitors manufactured prior to 1978 are also generally suspected to be PCB-contaminated, and must be disposed through DRMO. Because it is not practical nor cost effective to perform testing on these items, all items not permanently stamped or marked as "non-PCB" are also disposed as PCB-contaminated through DRMO as a best management practice.

### 16.3 ACCUMULATION, STORAGE, AND DISPOSAL OF PCB WASTE

All PCB transformers are shipped from Fort Polk to their final disposal site within 12 months of their out-of-service date. In most cases, they will be shipped much sooner than this. All PCB transformers or other PCB wastes are stored in a secure area, with adequate secondary containment, and with proper markings (a PCB label is used when required). Documentation is maintained on all PCB items in storage. PCB wastes must be in DOT or UN containers. Transformers, which are generally too large for over packs, must be sealed with no leaks. PCB labels are placed on all PCB containers as well as the applicable DOT shipping label (Class 9 Miscellaneous, as required by 49 CFR 170-189). All PCB wastes are

## **SECTION SIXTEEN**

## **Polychlorinated Biphenyls (PCBs)**

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disposed through DRMO using a standard DD Form 1348-1 A. PCB waste is not accepted into the DRMO complex, but is signed for in-place or at a designated area where this waste is consolidated as it awaits pickup by the DRMO contractor. Fort Polk has 50 or more PCB Large High or Low Voltage Capacitors and are therefore required to prepare and maintain an annual log. The written annual document log must be prepared for each facility by July 1 covering the previous calendar year. The annual document log shall be maintained for at least 3 years after the facility ceases using or storing PCBs and PCB items in the quantities prescribed in 40 CFR § 761.180(a).

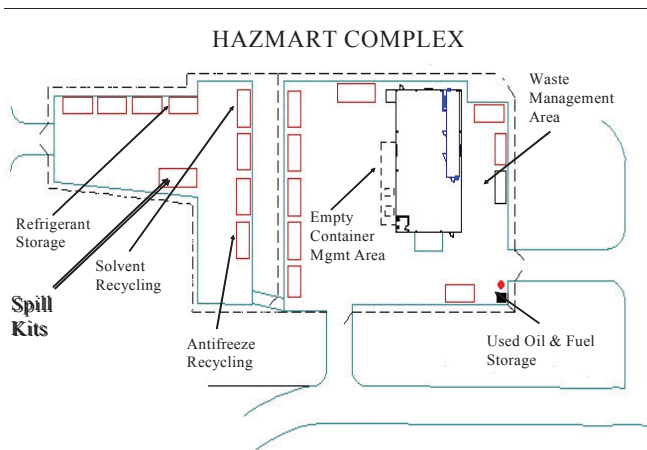
## SECTION SEVENTEEN

## HAZMART

### 17.1 PURPOSE AND SERVICES

The purpose of the HAZMART (established in 1997) is to minimize HW and associated costs through closer oversight during procurement of hazardous materials, through reuse/reissue of excess hazardous materials when possible, and by avoiding HW disposal for products through their use elsewhere. The HAZMART derived its name because personnel who work here provide a variety of customer service functions (such as in a shopping mart), and within the complex there are hundreds of hazardous materials that can be issued free to customers if needed. HAZMART personnel assist customers by:

- Reviewing customer HM orders for the supply system for accuracy
- Repackaging items if damaged upon arrival from supply system
- Researching delinquent supply orders before automatically reordering
- Providing Material Safety Data Sheets (MSDS) to customers for products
- Maintaining a large free-issue inventory of excess products
- Researching shelf life extensions for products as needed
- Building/issuing spill kits to rotational and home-based units/activities
- Collecting and managing waste products recycling or disposal



## SECTION SEVENTEEN

## HAZMART



Other significant activities occurring at the HAZMART are antifreeze and parts washer solvent recycling which are described below.

### 17.1.1 Antifreeze Recycling

Used antifreeze is not a HW at Fort Polk. All used antifreeze from military units is transported to the HAZMART by the ECSTs. Used antifreeze is bulked and recycled. The recycled antifreeze is reissued in both 55 gallon and 5 gallon containers to meet the needs of different customers. An antifreeze recycling SOP is included at Appendix N.



### 17.1.2 Parts Washer Solvent Recycling

#### 17.1.2.1 Overview

Approximately 120 Inland-brand parts washers exist on the installation which use Breakthrough brand solvent. The ECSTs service these parts washers each month, dispose machine filters when needed, and recycle used solvent through a distiller. Annual TCLP analysis confirms that the machine filters are HW. These filters (1% of the total waste stream) are managed as HW per the procedures of Section 6.0, HW Disposal Procedure. TCLP analysis has confirmed that the still bottoms (i.e., the sludge remaining in the bottom of the still after distillation) are non-regulated. This sludge is either added to and disposed with our used oil (when its viscosity allows) or is disposed as non-regulated waste through DRMO. Laboratory results referenced above are included in Appendix O.

#### 17.1.2.2 Distillation Procedure

When the ECST or unit determines that a parts washer's solvent is too dirty to be effective, the ECST will bring the drum of used solvent to building S14 in the HAZMART complex.

## SECTION SEVENTEEN

## HAZMART

The Distiller Manager will set up the machine which can recycle 55 gallons of solvent every 24 hours. When the solvent has been distilled, the Distiller Manager or another ECST will deliver the distilled solvent to the applicable unit. Although test results indicate that the air is safe to breathe while the distiller is operating (Appendix P), a respirator is still used by personnel in the distiller building during distiller operations due to the nuisance odor.





## SECTION EIGHTEEN

## HW Minimization Through Good Management of Hazardous Material

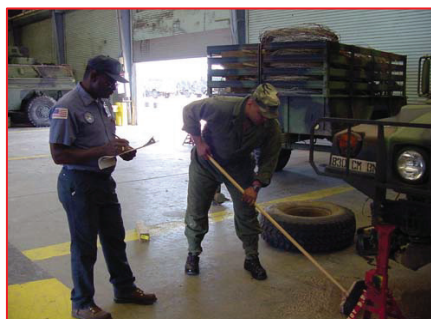
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### 18.1 GENERAL

The proper management of hazardous materials cannot be overemphasized. Failure to manage hazardous materials may lead to accidents, environmental releases, and/or the unnecessary generation of HW. Unnecessary HW disposal is costly and carries long-term liability. It is the responsibility of all personnel to ensure that hazardous materials are properly stored, used, and disposed. Hazardous materials are handled on Fort Polk per the guidance provided under the Hazard Communication (HAZCOM) Program (29 CFR 1910.120) and Army Technical Manual 38-410, Storage and Handling of Hazardous Materials.

### 18.2 CUSTOMER ASSISTANCE

ECSTs are assigned to individual activities on the installation, and greatly assist units by monitoring work areas and providing continuous guidance to activities about hazardous materials and HW. The ECSTs are assigned to installation activities as indicated in Appendix Q. While it is the unit/activity's responsibility to properly manage hazardous materials, the ECSTs can greatly assist them in container management, stock rotation, shelf life management/extensions, material compatibility, and obtaining the proper MSDS. Hazardous material assistance is also provided by the HAZMART (see Section 7.0) and through the information taught during the ECO Certification Course. Valuable Information is also received by activities through the Hazard Communication Program (HAZCOM) administered by the Directorate of Safety.





## **SECTION EIGHTEEN      HW Minimization Through Good Management of Hazardous Material**

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### **18.3    WASTE MINIMIZATION PRACTICES**

It is the responsibility of all personnel to ensure that hazardous materials are not disposed unnecessarily. Units are taught to always use materials in a “first in – first out” manner. Whenever possible, non-hazardous materials or products will be substituted for hazardous materials or products. Individuals and activities are encouraged to recycle at every opportunity. More details about waste minimization on Fort Polk can be found in Fort Polk’s Hazardous Waste Minimization (HAZMIN) Plan.

### **18.4    HAZARDOUS MATERIAL INVENTORIES (HMI)**

All units and activities are required to have an up-to-date HMI list on site. An updated HMI must be submitted to the IHWM (in building 2502) via the ECST on a quarterly basis. Any significant changes in a unit or activity’s HMI (such as a change in the type of hazardous materials stored, major changes in the quantities last reported, or a change in storage location) must be forwarded immediately to the IHWM. HMIs shall be submitted on FP Form 234 (Rev 1) 1 Aug 94 shown in Appendix R. This data is necessary for safety, fire protection, and emergency response reasons, as well as in order to meet several federal regulatory requirements.

## Abbreviations

**AHA** – Ammunition Holding Area  
**ASP** – Ammunition Supply Point  
**BJACH** – Bayne Jones Army Community Hospital  
**CFR** – Code of Federal Regulations  
**CMB** – Compliance Management Branch  
**DD** – Department of Defense  
**DOL** – Directorate of Logistics  
**DOT** – Department of Transportation  
**DPW** – Directorate of Public Works  
**DRMO** – Defense Reutilization and Marketing Office  
**ECO** – Environmental Compliance Officer  
**ECST** – Environmental Customer Service Technician  
**ENRMD** – Environmental and Natural Resources Division  
**EOD** – Explosive Ordnance Detachment  
**EPA** – Environmental Protection Agency  
**EQCC** – Environmental Quality Control Committee  
**FRH** – Flameless Ration Heaters  
**FORSCOM** – Forces Command  
**HAZCOM** – Hazard Communication  
**HM** – Hazardous Materials  
**HMI** – Hazardous Material Inventories  
**HW** - Hazardous Waste  
**IAW** – In Accordance With  
**ID** – Identification Number  
**IHWM** – Installation Hazardous waste Manager  
**ISB** – Intermediate Staging Base  
**JRTC** – Joint Readiness Training Center  
**LAC** – Louisiana Administrative Code  
**LDEQ** – Louisiana Department of Environmental Quality  
**MRE** – Meals Ready to Eat  
**MSDS** – Material Safety Data Sheet  
**NBC** – Nuclear Biological Chemical  
**NOV** – Notice of Violation  
**NSN** – National Stock Number  
**OB/OD** – Open Burning Open Detonation  
**OJT** – On-The-Job  
**PCBs** – Polychlorinated Biphenyls  
**RBRC** – Rechargeable Battery Recycling Coalition  
**RCRA** – Resource Conservation Recovery Act  
**SAP** – Satellite Accumulation Points  
**SW** – Solid Waste  
**TCLP** – Toxicity Characterization Leaching Procedure  
**TSCA** – Toxic Substances Control Act  
**UN** – United Nations



# NAVOSHENVTRACEN

## Appendix 1, INCOMPATIBLE MATERIALS CHART

MATERIAL GROUP	EXAMPLES	INCOMPATIBLE MATERIALS	EXAMPLES	REACTION IF MIXED
HMUG GROUP 1	<b>ACIDS</b> Battery Acids Paint Removers De-Rust Sprays	<b>FLAMMABLE/COMBUSTABLES</b> <b>ALKALIES/BASES/CAUSTICS</b> <b>OXIDIZERS</b> (GROUPS 2, 3, 4, 6, 7, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 22)	Degreasers, Carbon Removers Antifogging Compounds	<b>HEAT</b> <b>GAS GENERATION</b> <b>VIOLENT REACTION</b>
2	<b>ADHESIVES</b> Epoxies Isocyanates Diethylenetriamine	<b>ACIDS</b> <b>ALKALIES/BASES/CAUSTICS</b> <b>OXIDIZERS</b> (HMUG GROUPS 1, 3, 18)		<b>HEAT</b> <b>FIRE HAZARD</b>
3	<b>ALKALIES BASES/CAUSTICS</b> Ammonia, Sodium Hydroxide Sodium Bicarbonate Cleaners/Detergents	<b>ACIDS/OXIDIZERS</b> <b>FLAMMABLES/COMBUSTABLES</b> (HMUG GROUPS 1, 2, 6, 8, 9, 10, 11, 12, 14, 15, 17, 18, 19, 20, 22)	Battery Acid, Paint Removers, De-Rust Sprays, Paint, Solvents	<b>HEAT</b> <b>GAS GENERATION</b> <b>VIOLENT REACTION</b>
4	<b>CLEANING COMPOUNDS</b> Degreasers Carbon Removers Antifogging Compounds	<b>DETERGENTS/SOAPS</b> <b>OXIDIZERS</b> (HMUG GROUPS 7, 18)	Calcium Hydrochlorite, Sodium Nitrate, Hydrogen Peroxide	<b>HEAT</b> <b>FIRE HAZARD</b>
5	<b>COMPRESSED GASES</b> Acetylene, Helium Propane, Ammonia Oxygen	<b>HEAT SOURCES</b> CONSULT OPNAVIST 5100.19 (SERIES) AND NSTM 670 FOR SPECIFIC HANDLING AND STOWAGE GUIDANCE		<b>FIRE HAZARD</b> <b>EXPLOSION HAZARD</b>
6	<b>CORROSION PREVENTIVE COMPOUNDS</b> Corrosion Inhibitors Chemical Conversion Compounds	<b>ACIDS</b> <b>BASES</b> <b>OXIDIZERS</b> <b>IGNITION SOURCES</b> (HMUG GROUPS 1, 3, 18)		<b>FIRE HAZARD</b>
7	<b>DETERGENTS/ SOAPS</b> Detergents, Disinfectant, Scouring Powders, Sodium Hydroxide, Trisodium Phosphate, Potassium Hydroxide (Alkalies/Bases/Caustics)	<b>ACID-CONTAINING COMPOUNDS</b> (HMUG GROUPS 1, 4, 5)	Battery Acid, Paint Removers, De-Rust Sprays	<b>VIOLENT REACTION</b> <b>HEAT</b>
8	<b>GREASES</b> Graphite Silicone Molybdenum	<b>OXIDIZERS</b> <b>ALKALIES/BASES/CAUSTICS</b> (HMUG GROUPS 3, 18)		<b>FIRE HAZARD</b>
9	<b>HYDRAULIC FLUIDS</b> Petroleum-Based Synthetic Fire-Resistant	<b>CORROSIVES</b> (HMUG GROUPS 1, 3) <b>OXIDIZERS</b> (HMUG GROUP 18)		<b>HEAT</b> <b>VIOLENT REACTION</b>
10	<b>INSPECTION PENETRANTS</b> Petroleum-Based Dyes	<b>CORROSIVES</b> (HMUG GROUPS 1, 3) <b>OXIDIZERS</b> (HMUG GROUP 18)	Battery Acid Chlorine Laundry Bleach Calcium Hypochlorite Calcium Oxide Hydrogen Peroxide OBA Canisters Lithium Hydroxide Ammonia Paint Removers	<b>EXPLOSION HAZARD</b>
11	<b>LUBRICANTS/ OILS</b> Gen. Purpose, Turbine, Gear, Vacuum, Weapon	<b>CORROSIVES</b> (HMUG GROUPS 1, 3) <b>OXIDIZERS</b> (HMUG GROUP 18)		
12	<b>PAINTS</b> Primers, Enamels, Laquers, Strippers	<b>OXIDIZERS</b> (HMUG GROUP 18) <b>CORROSIVES</b> (HMUG GROUPS 1, 3)		<b>HEAT</b> <b>FIRE HAZARD</b>
13	<b>PHOTO CHEMICALS</b> Color and B/W, Toners Developers, Replenishers Bleaches/Stopbath	<b>ACIDS</b> <b>HEAVY METALS</b> (HMUG GROUPS 1, 20)		<b>HEAT</b> <b>FIRE HAZARD</b>
14	<b>POLISH/WAX COMPOUNDS</b> Buffing Compound Metal Polish Gen. Purpose Wax	<b>CORROSIVES</b> <b>OXIDIZERS</b> (HMUG GROUPS 1, 3, 18)		<b>HEAT, FIRE HAZARD</b> <b>VIOLENT REACTION</b>
15	<b>SOLVENTS (HYDROCARBONS)</b> Acetone, Methyl Ethyl Ketone (MEK), Toluene, Xylene, Alcohols	<b>CORROSIVES</b> <b>OXIDIZERS</b> <b>BATTERIES</b> (HMUG GROUPS 1, 3, 18, 21)	Battery Acid Calcium Hypochlorite Sodium Nitrate Hydrogen Peroxide Sodium Hydroxide	<b>HEAT</b> <b>FIRE HAZARD</b>
16	<b>THERMAL INSULATION</b> Asbestos, Fibrous Glass Man-Made Vitreous Fibers	<b>MATERIAL IS NOT REACTIVE</b> <b>KEEP DRY</b>		<b>NO REACTION</b>
17	<b>WATER TREATMENT CHEMICALS</b> Tri-Sodium Phosphate Caustic Soda Citric Acid Harness Buffer Titrating Solutions	<b>CORROSIVES</b> <b>OXIDIZERS</b> <b>HEAVY METALS</b> (HMUG GROUPS 1, 3, 18, 20)		<b>HEAT</b> <b>VIOLENT REACTION</b>
18	<b>OXIDIZERS</b> Chlorine Laundry Bleach Calcium Hypochlorite, Calcium Oxide Hydrogen Peroxide, OBA Canisters Lithium hydroxide	<b>PETROLEUM BASED MATERIALS</b> <b>FUELS SOLVENTS,</b> <b>CORROSIVES, HEAT</b> GROUPS 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 14, 15, 17, 19, 20, 21, 22)		<b>FIRE HAZARD</b> <b>TOXIC GAS GENERATION</b>
19	<b>FUELS</b> JP4, JP5, Gasoline	<b>CORROSIVES</b> <b>OXIDIZERS</b> (HMUG GROUPS 1, 3, 18)	Battery Acid Calcium Hypochlorite Sodium Nitrate Sodium Hydroxide	<b>FIRE HAZARD</b> <b>TOXIC GAS GENERATION</b>
20	<b>HEAVY METALS</b> Beryllium, Chromium, Copper, Lead, Magnesium, Mercury, Nickel, Strontium Chromate, Tin, Zinc	<b>CORROSIVES</b> <b>OXIDIZERS</b> <b>WATER TREATMENT/</b> <b>PHOTO CHEMICALS</b> (HMUG GROUPS 1, 3, 6, 13, 17, 18, 21)		<b>VIOLENT REACTION</b> <b>GENERATION OF TOXIC AND FLAMMABLE GAS</b>
21	<b>BATTERIES</b> Lead Acid, Alkaline Lithium, Dry Cell	<b>SOLVENTS</b> <b>HEAVY METALS</b> <b>OXIDIZERS</b> (HMUG GROUPS 15, 18, 20)	Xylene Toluene Alcohol Tin Zinc Chromium	<b>HEAT</b> <b>VIOLENT REACTION</b> <b>TOXIC GAS GENERATION</b>
22	<b>PESTICIDES</b> Insecticides, Fungicides Rodenticides, Fumigants	<b>CORROSIVES</b> <b>OXIDIZERS</b> (HMUG GROUPS 1, 3, 18)		<b>TOXIC GAS GENERATION</b>



1. This Chart is to be used as a **Guide Only!**
2. Compare the desired HMUG Group in the left column with the Incompatible Material(s) of that Group in the Center Column, on the same row.
3. Should the Material(s) in the Center Column be mixed with the desired Group in the Left Column, the Expected Reaction(s) can be seen in the right Column.
4. For **specific information** on storage of Hazardous Materials, consult the MSDS, HMUG, OPNAVINST 5100.19 (Series), NSTM 670, Ships Hazardous Material List (SHML), and NAVSUP PUB 573.

Produced for COMNAVSUPSYSCOM  
By  
NAVAL OCCUPATIONAL SAFETY AND HEALTH,  
AND ENVIRONMENTAL TRAINING CENTER

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COM (804) 445-8778 DSN 565-8778 EXTENSION 345 or 343  
REV 1/JANUARY 1996

## MOCK SPILL RESPONSE EXERCISE EVALUATION FORM

A Mock Spill Test involving Hazardous Materials was conducted at:

Unit/Organization \_\_\_\_\_  
Facility BLDG# \_\_\_\_\_  
Phone# \_\_\_\_\_

The training simulation involved a spill of \_\_\_\_\_ Gallons/drums of \_\_\_\_\_ (water to simulate the liquid) at the new hazardous material storage area/in-use hazardous material storage area/used POL storage area/satellite collection point (SCP).

The following information is provided:

1. ECO present? Yes/No (Name)
2. Supervisor present? Yes/No (Name)
3. Response Personnel? (Name)
4. Spill plan and spill report forms available. Yes/No
5. Is PPE readily available and used by responders? Yes/No
6. If not, what do you need to supply?
7. Adequate absorbent material readily available? Yes/No
8. If not, how much extra do you need?
9. Support equipment used to contain and clean spill available. Yes/No
10. If not, what do you need to respond to the spill?
11. Is the contaminated absorbent material properly disposed of? Yes/No
12. Has the spill been reported to the fire department? Yes/No

(Over 10 Gallons, Any in water, or High risk)

13. Have all parties involved reviewed this spill exercise? Yes/No
14. Have deficiencies observed during response exercise been discussed and corrected with response personnel? Yes/No
15. Does unit spill plan list correct steps for responding to a spill at that site? Yes/No

Evaluator Name: \_\_\_\_\_ Date: \_\_\_\_\_

Section:

1. TOTAL PRICE										2. SHIP FROM										3. SHIP TO																																							
UNIT PRICE										DOLLARS										CTS																																							
DOLLARS										CTS										4. MARK FOR																																							
5. DOC DATE										6. NMFC										7. FRT RATE										8. TYPE CARGO										9. PS																			
10. QTY. REC'D										11. UP										12. UNIT WEIGHT										13. UNIT CUBE										14. UFC										15. SL									
16. FREIGHT CLASSIFICATION NOMENCLATURE																																																											
17. ITEM NOMENCLATURE																																																											
18. TY										19. NO CONT										20. TOTAL WEIGHT										21. TOTAL CUBE																													
CONT																																																											
22. RECEIVED BY																				23. DATE RECEIVED																																							
27. ADDITIONAL DATA																																																											
26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)																																																											
25. NATIONAL STOCK NO. & ADD (8-22)																																																											
24. DOCUMENT NUMBER & SUFFIX (30-44)																																																											

PREVIOUS EDITION MAY BE USED

N  
CONSOLIDATED SOLID WASTE  
COLLECTION POINT

Tuesday, July 27, 2010

DRMO  
HAZARDOUS WASTE  
90 DAY STORAGE

HAZMART

4369

Bldg's  
S-7 S-8



Section:

Fort Polk Environmental Laboratory  
1867 23rd Street, Bldg 2530 Fort Polk, La 71459  
PH (337) 531-2640 FX (337) 531-9633

# CHAIN OF CUSTODY

Building Number

Page of

Collection Date:

Date Lab Received

Date Analyzed

Parameter:

[illegible]

I certify the sample collected has been properly inventoried, labeled, preserved and packaged.

COLLECTOR (PRINT)

SIGNATURE

## LABORATORY ANALYSIS

certify that I received from the collector the sealed sample as noted about with seal intact and in apparent good condition.

SIGNATURE

ANALYST

After recording these samples in the Official Record book, these same samples will be in the custody of competent laboratory personnel at the all times, locked in a secured area, or in transport to a contract laboratory.

Relinquished by:

Relinquished by:

Relinquished by:

Date &amp; Time:

Date &amp; Time:

Date &amp; Time:

Received by:

Received by:

Received by:

Date &amp; Time:

Date &amp; Time:

Date &amp; Time:

Friday, September 07, 2012

## CHAPTER 204

### HAZARDOUS MATERIAL

#### A. GENERAL

1. All DOD personnel (military, civilians and contractors) participating in the shipment/movement of HAZMAT must comply with the rules of regulatory bodies governing the safe transportation of HAZMAT for modes of transportation. Although exceptions are noted in the 49 CFR (173.7 (b)), U.S. Government Material, for shipments for national security, all DOD personnel will comply with 49 CFR unless otherwise authorized by the DTR. For explanations pertaining to shipments for national security, see Paragraph C.4 of this chapter.
2. This chapter contains the policies, procedures, and responsibilities for movement of HAZMAT by all modes of commercial transportation and military surface transportation operated by military, DOD civilian personnel, and DOD contractor personnel. CDRs may apply more stringent requirements. Policies, procedures, and responsibilities for movement of HAZMAT by military air shipment are identified in AFMAN 24-204(I)/TM 38-250/MCO P4030.19I/NAVSUP Pub 505/DLAI 4145.3/DCMAD1, CH 3.4 (HM24), (Web site: <http://www.afmc-pub.wpafb.af.mil/Hazmat/>). For purposes of this regulation, the terms ammunition, explosives, and munitions are synonymous. Also, the term HAZMAT includes all hazard classes of HAZMAT, including munitions.
3. For all matters related to immediate response capabilities for chemical and biological warfare material, contact the United States Army Technical Escort Unit (TEU) at:
  - a. During Duty Hours: TEU Command Group, DSN: 584-3044, Commercial: 410 436-3044 or TEU Operations, DSN: 584-7211, Commercial: 410 436-7211 or TEU Public Affairs DSN: 584-6455, Commercial: 410 436-6455.
  - b. After Duty Hours: US Army Soldier and Biological Chemical Command Emergency Operations Center at DSN: 584-2148, Commercial: 410 436-2148. Ask to be connected to the TEU S3.

The US Army TEU provides the DOD and other federal agencies with a unique, immediate response capability for chemical and biological warfare material. The TEU missions include worldwide response for escorting, packaging, detection, and monitoring, rendering-safe, disposing, sampling, mitigating hazards and identifying weaponized and non-weaponized chemical, biological and HAZMAT.

4. All matters establishing, amending, and/or clarifying DOD HAZMAT rules and regulations will be referred to Theater CDRs or DOD Component HQs. HAZMAT issues requiring coordination or further handling by Federal Regulatory Agencies will be forwarded through Service HQs to SDDC Global Distribution, ATTN: SDG3-GD-BP (HAZMAT/SAFETY TEAM – Mr. Radford), 661 Sheppard Place, Ft. Eustis, VA 23604-1644, DSN: 826-8040, Commercial: 757 878-8040.
5. The Services/Agencies are authorized to apply more stringent requirements but are not authorized to prescribe less stringent requirements than in this regulation.



## B. RESPONSIBILITIES

### 1. SDDC Operations Center:

- a. Is the DOD liaison to the Federal DOT and other state and federal regulatory agencies on all DOD matters concerning the transportation of HAZMAT. See Figure 204-1.
- b. Provides shippers with export routing instructions.
- c. Arranges for expedited service upon request of the TO.
- d. Provides operational management and control (including maintenance and repair) of the Army-owned Containerized Ammunition Distribution System (CADS) containers IAW this Regulation, Part VI.
- e. Monitors carrier compliance with HAZMAT safety requirements.

### 2. Each DOD Component will:

- a. Establish procedures and prepare any documentation necessary to implement this regulation. A copy of all implementing documentation will be forwarded to HQ SDDC, ATTN: SDG3-GD.
- b. Designate a focal point for DOT Exemptions (DOT-E), CAA, Certifications of Equivalency (COE), and Special Approvals IAW Paragraph H and Figure 204-2. This includes requests for new approvals, renewals, usage reports, and maintaining copies of current approvals. All such requests will be sent to HQ SDDC, ATTN: SDG3-GD for processing with regulatory authorities.

### 3. TO will:

- a. Ensure only commercial or MOV/government vehicles are used for transporting HAZMAT and Hazardous Waste (HW) as defined by 40 CFR, Part 261, Section 261.3, Definition of Hazardous Waste. Use of POVs for transporting HAZMAT and HW is prohibited. See Paragraph F.3.d below for the policy on use of rental vehicles.
- b. Ensure, before releasing HAZMAT, the driver(s) has the items listed below and meets the requirements of DODR 4500.36-R, Management, Acquisition, and Use of Motor Vehicles, when using DOD motor vehicles. One of the forms of identification must contain the driver's photograph.

#### (1) Ensure the driver has a license, as follows:

- (a) Military personnel (active duty; National Guard, including full-time technicians; and Reservists, not in technician status) will have a current military driver's license annotated with authorized vehicle type(s) and HAZMAT training endorsement(s) and supported by a valid civilian driver's license.
- (b) Commercial drivers, DOD civilian employees and Reservists in technician status will have a valid Commercial Driver's License (CDL) with an endorsement for the type of HAZMAT being transported and type vehicle. Additionally, a military

driver's license is required for civilian employees when driving a government vehicle.

- (c) Contractor personnel must meet the same requirements as Paragraph 3.(1)(b) but will only be issued a military driver's license for those US Government vehicle types regularly operated.
  - (d) Foreign national drivers working for the US Government OCONUS will, at a minimum, have a valid civilian driver's license from the HN and a permit/agreement stating the joint employment policy and specifying limitations/restrictions for the foreign national drivers. A military driver's license is required while driving those US Government vehicle types regularly operated.
  - (2) Ensure the driver has a current (issued within the previous 24 months) DOT medical examiner's certificate (not required for military drivers).
  - (3) Ensure the driver has an employee identification card or similar document that identifies the driver.
  - (4) Ensure the driver has a written route plan, as prescribed by 49 CFR, Subpart C, Section 397.67(d), Motor Carrier Responsibility for Routing, for classes of HAZMAT. For radioactive material, ensure the driver has a route plan IAW 49 CFR, Subpart D, Section 397.101, Requirements for Motor Carriers and Drivers.
  - c. Ensure shipping papers, i.e., BL; GBL (International only), DD Form 836, Dangerous Goods Shipping Paper/Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles, Figure 204-3, or Shippers Declaration for Dangerous Goods, Figure 204-7, are annotated with HAZMAT data IAW modal regulations. Additionally, ensure the CAA, COE, DOT-E number or Special Approval is annotated on the shipping papers.
- NOTE:** GBLs will be used for shipments into a foreign country that does not recognize DOD cargo being documented on CBLs or requires a GBL for verification of DOD cargo.
- d. Ensure the HAZMAT is properly marked, packaged, and labeled for shipping IAW MIL-STD-129 and directives as specified in Paragraph C.
  - e. Ensure motor vehicles are inspected IAW Paragraph F.3.e, and rail cars IAW Paragraph F.4.a.
  - f. Ensure shipments are loaded, blocked, and braced IAW modal regulations.
  - g. Ensure transport vehicles are placarded IAW 49 CFR, Subpart F, Placarding, and Standard North Atlantic Treaty Organization (NATO) Agreements (STANAGs), or international directives and regulations.
  - h. Ensure vehicle drivers have a copy of the shipping papers. DOD HAZMAT cargo originating in the CONUS using a CBL or similar shipping papers that are shipped to OCONUS shipping ports and reloaded on MOV/organic vehicles may be used as the vehicle shipping document being transported to the overseas inland consignee final destination.

- i. Prior to release, ensure commercial/contractor and military vehicle drivers receive emergency response instructions. The 2004 Emergency Response Guidebook (latest edition) can be used for this purpose (See <http://hazmat.dot.gov/guidebook.htm>). See Paragraph F.3.h. for emergency response telephone number information, and proper reporting procedures for accidents, incidents, or delays en route. Information regarding secure holding is found in Chapter 205.
  - j. Ensure ATCMD/TCMDs are completed IAW Chapter 203. ATCMD/TCMDs for export airlift munitions shipments will be sent to the Service ACA and JMTCA (AMSOS-JT). Prior to the movement of munitions to the APOE, aerial port clearance will be obtained from the JMTCA.
  - k. Except in instances where an electronic BL meets time limits and is transmitted directly to the final destination, send a REPSHIP (See Figure 204-8) to the consignee. Reports will be transmitted IAW Chapter 205, Paragraph L.
  - l. Trace munitions (Class 1) shipments when not received four hours after ETA and report all discrepancies on a TDR IAW Chapter 210 of this regulation.
  - m. Report overage, shortage, damage, and other transportation-type discrepancies, IAW Chapter 210.
  - n. Furnish an annual Exemption/Packaging CAA usage report to the Service/Agency component, which will consolidate all such usage reports and forward them to HQ SDDC.
  - o. Shippers and carriers who receive shipping papers must retain a copy or an electronic image thereof that is accessible at or through its principal place of business and must make the shipping paper immediately available, upon request, to an authorized official of a Federal, State, or local government agency at reasonable times and locations.
4. Retention of Shipping Papers by Shippers. For HW, a copy of each shipping paper must be retained for three years after the initial carrier accepts the material for shipment. For all other HAZMAT, a copy of each shipping paper must be retained for 375 days after the initial carrier accepts the material for shipment. For radioactive materials, shipping papers associated with shipments and receipt of radioactive materials must be retained for three years, IAW Title 10 CFR Part 30. Each shipping paper copy must include the date of acceptance for shipment by the initial carrier. The date on the shipping paper may be the date a shipper notifies the carrier that a shipment is ready for transportation, as indicated on the waybill or BL, as an alternative to the date the shipment is picked up, or accepted, by the carrier. Shipping papers must also be retained IAW this section or by Service/Agency regulatory requirements if the latter are more stringent than the requirements above. Services/Agencies are not authorized to prescribe less stringent requirements than in this regulation.
- a. Original vouchers and support documents covering commercial freight charges of settled fiscal accounts, including registers and other control documents, but excluding those covered by 4.b. below, will be maintained for a period of six years.
  - b. Records covering payment for commercial freight charges for services for which:
    - (1) Notice of overcharge has been or is expected to be issued, or if a rail freight overpayment is involved;

- (2) Deduction or collection action has been taken;
- (3) The voucher contains inbound transit shipments(s);
- (4) Parent voucher has print of paid supplemental bill associated;
- (5) The voucher has become involved in litigation, or
- (6) Any other condition arises, such as detection of overcharge, which prevents the settling of the account, requiring the voucher to be retained beyond the six year retention period will be maintained for a period of 10 years.

## C. REGULATORY REQUIREMENTS

1. This applies to all HAZMAT.
  - a. Ammunition or explosives may not be shipped in uploaded and ready-to-fire configuration over public highways, via rail, vessel, or commercial/military aircraft.
  - b. Regulated DOT HAZMAT will be shipped in UN/DOT or DOD-approved packages.
2. Commercial surface and air movement. Military shippers arranging transportation of HAZMAT must comply with local, state, federal (49 CFR), and international laws and regulations and SOFA, STANAG, HN, and DOD Component publications. Procedures for transporting government-owned small arms, ammunition, and HAZMAT aboard commercial/passenger aircraft in scheduled and charter service are contained in Appendix S. DOD or contractor personnel who fail to comply may be liable for civil and criminal personal liability penalties for violations and any resulting penalties.
3. Military Airlift. Requirements for military aircraft and commercial aircraft under contract to the AMC operating under DOT-E 7573 are covered in AFMAN 24-204(I)/TM 38-250/MCO P4030.19I/NAVSUP Pub 505/DLAI 4145.3/DCMAD1, CH 3.4 (HM24). Procedures for transporting government-owned small arms, ammunition, and HAZMAT aboard commercial aircraft in scheduled and charter service are contained in Appendix S.
4. Shipments for National Security. The provisions of 49 CFR, § 173.7(b), U.S. Government Material, may only be used under a special program approved by the Service or DOD component HQs. The program will provide equal or better protection than the normal DOD/Service/DOT rules during transport. The approving official will be at the general officer level or equivalent. The approving official will sign the memorandum that certifies that the shipments made within the specific program are in the interest of national security. A copy of the memorandum will be in the possession of the person who is in charge of the security escort team.
5. Military Vehicle Surface Movement.
  - a. Installation (other than public highway). The Services will determine requirements for on-installation transportation of regulated amounts of HAZMAT as defined in 49 CFR, Section 172.101, Purpose and Use of Hazardous Materials Table. At a minimum, the Services/Agencies will address operator training, driver licensing, minimum blocking and bracing requirements, and emergency notification procedures for incidents and/or accidents on roads controlled by the Services/Agencies. A road is considered controlled by the

Services/Agencies if access to the road is restricted at all times through the use of gates and guards.

- b. Installation (public access). Comply with the requirements of Paragraph C.2 when moving HAZMAT over uncontrolled roads. A road is considered uncontrolled by the Services/Agencies if it is used by the general public (including family members of Service/Government personnel) without having to gain access through a controlled access point.
  - c. Off-installation. The Service tactical and combat units must adhere to the requirements of 49 CFR when transiting public highways. Installation CDRs will develop procedures for the movement of HAZMAT on installation or government roads and over public highways IAW or more stringent than 49 CFR and this regulation if tactical or combat units travel on roads accessible to civilians, family members, military personnel or contractors, to include operations needed to meet daily training and mission readiness requirements, i.e., Explosive Ordnance Disposal (EOD), security forces, munitions or ordnance handling functions. OCONUS comply with HN requirements.
  - d. Intra-facility. The EPA promulgated a rule that exempts manifest requirements for all intra-facility/on-installation HW shipments, as defined by 40 CFR, Section 261.3. If a HW shipment occurs on a public or private right-of-way that is within or along the border of the installation, an EPA manifest, otherwise required under 40 CFR, Part 262, Standards Applicable to Generators of Hazardous Waste and 49 CFR, Part 172.205, Hazardous Waste Manifest, is not required. The DOD has also adopted these standards for intra-facility/on-installation shipments of HW. However, some form of documentation, e.g., DD Form 1348-1A, Figure 202-7, DA Form 3161, Request for Issue or Turn-In, Figure 204-9, or DD Form 836, Figure 204-3, describing the HW must accompany the shipment to aid in tracking and managing the HW while on-installation. HW being transported off-installation must comply with all DOT and EPA transport requirements. UN packaging is not required for on-installation movement of HAZMAT and HW unless prescribed by the Service/Agency Standard Operating Procedures (SOP) or regulation but is required for all off-installation movement unless packaged IAW procedures described in Paragraph H below.
6. Brokers and freight forwarders (which includes shipper agents and shipper associations) are restricted from handling Class 1, Division 1.1 thru 1.6, sensitive munitions, or other shipments requiring Dual Driver Protective Service (DDP), Constant Surveillance Service (CIS), Motor Surveillance Service (MVS), or Signature and Tally Record Service (675). All cargo subject to FAR-based contracts originating at installations must be first offered to one of the awarded FAR-based contract carriers of a given lane before moving traffic via an alternate means. Upon approval by SDDC, voluntary tenders may be used only during contingency conditions or when the volume exceeds the contractor's capacity.
  7. The shipper or person who stuffs the container and has been designated by the CDR to certify HAZMAT cargo will sign the Multimodal Dangerous Goods Form, Figure 204-14.

## D. TRAINING

### 1. Mandatory Training.

- a. All personnel involved with the preparation and shipment of HAZMAT for surface transportation must receive training IAW this regulation, 49 CFR Subpart H, Training Requirements, and DOD Component regulations. Training for military air shipments will be IAW AFMAN 24-204(I)/TM 38-250/MCO P4030.19I/NAVSUP Pub 505/DLAI 4145.3/DCMAD1, CH 3.4 (HM24).
- b. Persons who certify HAZMAT on shipping papers by any mode of transportation, military or commercial, with the exception of Technical Specialists (See Paragraph D.1.c.), must successfully complete an initial 80-hour HAZMAT certification course from one of the DOD schools listed below:
  - (1) Dean, School of Military Packaging Technology  
ATTN: ATSL  
360 Lanyard Rd  
Aberdeen Proving Grounds, MD 21005-5282  
DSN: 298-5185, Commercial: 410 278-5185, FAX: 2176/5143  
Web address: <http://smpt.apg.army.mil/>
  - (2) 345th Training Squadron, Transportation Training Flight  
345 TRS/TTTH  
1000 Seymoyer  
Lackland AFB, TX 78236-5404  
DSN: 473-4917, Commercial: 210 671-4917  
Web address: <https://wwwmil.lackland.af.mil/37TRG/345TRS/index.htm>
  - (3) Navy Supply Corps School  
1425 Prince Ave  
Athens, GA 30606  
DSN: 354-7240/7215, Commercial: 706 354-7240/7215  
Web address: <https://www.nscs.cnet.navy.mil/>
  - (4) Department of the Army  
Defense Ammunition Center (Training Directorate)  
Attn: SJMAC-AST  
1C Tree Rd  
McAlester, OK 74501-9053  
DSN: 956-8931, Commercial: 918 420-8931, FAX: 8944  
Web address: <http://www.dac.army.mil/as>
- c. Technical specialists are personnel who are trained and qualified to certify specific types of HAZMAT on selected transportation modes as prescribed by each Service. Additionally, technical specialists may certify HAZMAT on DD Form 836, Figure 204-3, for transportation of HAZMAT in military or government-owned vehicles in support of operations needed to



meet daily training and mission readiness requirements, e.g., on-installation training, intra-installation, and local, state, federal roadways transportation of HAZMAT. Successful completion of one of the courses identified in Paragraph D.1.b is not required. However, the technical specialist must meet all other training requirements of this Chapter. This training provision does not qualify technical specialists to certify HAZMAT for commercial air or commercial truck transport.

- (1) As a minimum, the technical specialist will be trained in packaging, preparation, marking, labeling, certification, and all other aspects of the governing modal regulation relevant to the specific HAZMAT within the individual's specialty.
  - (2) All technical specialist training, including for completion of the shipper's certification, will be conducted by an individual qualified under training IAW Paragraph D.1.b.
- d. Persons who only certify HW shipments may satisfy the requirement of Paragraph D.1.b by successfully completing one of the following courses:

- (1) Hazardous Waste Management and Manifesting Course, offered by:

USACE Professional Development Support Center  
ATTN: CEHR-P-RG (Registrar)  
Box 1600  
Huntsville, AL 35807-4301  
DSN: 760-7421, Commercial: 256 895-7421, FAX: 7469  
Web address: <http://www.hnd.usace.army.mil/>

- (2) Transportation of Hazardous Material (HM)/HW for DOD, offered by:

DLA Training Center (DTC)  
P.O. Box 3990, East Broad Street, Building 11, Section 5  
Columbus, OH 43216-5000  
DSN: 850-5990, Commercial: 616 692-5990  
Toll free: 800 458-7903  
Web address: <http://www.dtc.dla.mil/>

- e. Medical personnel who manage, package, certify, or prepare laboratory samples and specimens and regulated medical waste only, for transport by any mode, may satisfy this requirement by successfully completing the following course:

- (1) Transport of Biomedical Material Course (Initial and Refresher) offered by:

U.S. Army Center for Health Promotion and Preventive Medicine, (USACHPPM)  
5158 Blackhawk Road  
Aberdeen Proving Ground, MD 21010-5403  
DSN: 584-5228/3651, Commercial: 410 436-5228/3651, Fax: 5237  
Toll free: 800 222-9698  
Web address: <http://chppm-www.apgea.army.mil/trng/datepage.htm> - Force.

Select training conferences for specific course dates and locations. On-site training is available by request through the Web address.

- f. DOD drivers transporting HAZMAT over public highways will, as a minimum, receive training on proper vehicle operation, securing loads (blocking and bracing), placarding requirements, vehicle route restrictions, required documentation, actions in the event of an incident or accident, and emergency notification procedures. Licensing requirements are identified in Paragraph B.3.b.(1).
- g. Persons who only certify radioactive (Class 7) HAZMAT on shipping papers by any mode of transportation, military or commercial may satisfy the requirement of Paragraph D.1.b. by successfully completing the following course:

- (1) U.S. Army Communications-Electronics Command Radioactive Commodity Identification and Transportation Course, offered by:

U.S. Army Communications-Electronics Command  
Directorate for Safety  
Attn: AMSEL-SF-RE  
Fort Monmouth, NJ 07703-5024

DSN: 987-3112 Commercial: 732 427-3112

Web address: <http://www.monmouth.army.mil/cecom/safety>

## 2. Refresher Training.

- a. All HAZMAT personnel must receive refresher training at 24-month intervals IAW Service/Agency policy. This applies to all levels of required training, to include personnel involved with certifying shipments, preparation, packaging, or handling HAZMAT for transportation. Refresher training for persons who certify HAZMAT and conduct technical specialist training for subordinate personnel must be received from one of the approved schools listed in Paragraph D.1.b, D.1.d (for HW), or D.1.e. (for biomedical materials).
  - b. The military or agency focal point (Figure 204-2) may grant a 60-day extension to this policy. Successive 60-day extensions to a person's qualification expiration date may be granted for long-term or contingency operations. For US Air Force personnel, extensions may be granted by the major command focal point. Extensions do not apply to commercial air shipments.
3. Training Records. All training, to include testing, will be documented in personnel training records. Records will be maintained for as long as a person works for the DOD and for 90 days after separation from the DOD. If an individual subsequently moves to another Command/Agency, this training record will be sent to the gaining Command/Agency. This record must indicate the following:
- a. Name of person who received the training.
  - b. Date training took place.
  - c. A complete description or copy of materials used to train, including title and date of the materials, if a copy is not attached.



- d. The name and address of the person (school facility) providing the training.
  - e. Certification statement of completion of training and testing.
- 4. Testing. Testing will be done IAW 49 CFR, 172.702 (d). The member/employee must successfully pass a written test, and a test record must be maintained in the member's/employee's file for review.
  - 5. Appointment. All personnel signing certification statements on shipping papers must be appointed in writing by the activity or unit CDR or designated representative. The appointment must include the scope of authority and expiration date. A copy of appointment orders will be provided to the TO.
  - 6. Certification. In all cases, the individual who signs the certification statement must personally inspect the HAZMAT item being certified.

## **E. EXPLOSIVES HAZARD CLASSIFICATION**

Explosive hazard classification information for DOD munitions is found in the Joint Hazard Classification System (JHCS), at <https://www.dac.army.mil/>, and the NAVSEA SWO20-AC-SAF-010, the Transportation and Storage Data for Ammunition, Explosives and Related Hazardous Materials. Explosive hazard classification of items not listed in the JHCS or NAVSEA publication may be obtained from the following POC:

### **1. Army.**

SJMAC-ES  
Defense Ammunition Center  
Technical Center for Explosives Safety  
1 C Tree Road, Building 35  
McAlester, OK 74501-9053  
Commercial: 918 420-8807, DSN: 956-8807  
Web address: <http://www.dac.army.mil/es/default.asp>

### **2. Navy/Marine Corps.**

Commanding Officer  
Naval Ordnance Safety and Security Activity  
Attn: Code N714  
Farragut Hall, Building D323  
23 Strauss Avenue  
Indian Head, MD 20640-5555  
Commercial: 301 744-6021/6047, DSN: 354-6021/6047  
Web address: <https://intranet.nossa.navsea.navy.mil/>

3. Air Force.

HQ Air Force Safety Agency  
Attn: SEWV  
9700 G Avenue SE  
Suite 264 Building 24499  
Kirtland AFB, NM 87117-5670

Commercial: 505 846-6059, DSN: 246-6059, Fax: 6027

## F. MOVEMENT OF HAZMAT

1. Routing:

- a. CONUS. Carrier selection for CONUS HAZMAT shipments will be IAW DRO procedures in Chapter 202.
- b. Export. The DOD Component NICP for munitions (Class 1), retail activities, or TOs will submit shipment request data IAW Figure 204-10, to the CDR, US Army Field Support Command, ATTN: JMTCA, Rock Island, IL 61299-6000. The shipment request may be submitted by FAX to Commercial: 309 782-6811 or DSN: 793-6811. The JMTCA will consolidate these requirements into planned ocean vessel loads and issue a requirements planning message to all concerned. This message will also serve as a DOD consolidated shipment request under the “Fast Release for Ammunition” (Class 1) procedures and be provided to SDDC for issuance of an ETR to the shipping TOs and the JMTCA. See Figure 204-11 for data elements used in the SDDC acknowledgment of ETR for ammunition (Class 1). The in-port date will be coordinated among JMTCA, SDDC, the SPOE, the DOD Component NICPs, and the shippers.
- c. FMS. A shipment request, Figure 204-9, will be submitted to JMTCA for Delivery Term Code (DTC) 6, 7, and 9. The JMTCA will also process shipment requests for DTC 8, customer country-controlled carriers at DOD controlled ports. The DOD Component NICP, retail activities, and TOs will submit shipment request data IAW Paragraph F.1.b. The JMTCA will submit these requirements on a planned ocean vessel message and issue a shipping message to all concerned. This message will be provided to SDDC, who will issue an ETR to the TOs and the JMTCA. See Figure 204-11 for data elements used in SDDC acknowledgment of ETRR for ammunition (Class 1). The in-port cargo date(s) will be coordinated among the JMTCA, SDDC, freight forwarder(s), SPOE, TOs, and DOD Components NICPs.

2. Carrier Assistance:

- a. To promote safety, expedite transportation, and ensure delivery of HAZMAT shipments, the DOD Component may extend any technical assistance and aid considered necessary in connection with moving, salvage, demolition, neutralization, or other disposition of Government-owned shipments being transported or stored by carriers. Except for emergency situations, requests for carrier assistance will be in writing before the fact. Secure holding areas must always be given consideration. Contact the SDDC Operations Center at 800 524-0331, for secure holding information.
- b. If assistance is given, the Government does not assume any liability and the carrier may be held responsible for all expenses incurred by the Government.

- c. Collection of money for services rendered will be IAW DOD Component regulations.
  - d. See Chapter 205, Paragraphs P and Q, for additional types of assistance.
3. Motor Movement Requirements:
- a. Licensing Requirements for Drivers. See Paragraph B.3.b.(1) above.
  - b. Substitute Rail Service. Use of substitute rail service (trailer-on-flatcar) by motor carriers is prohibited for shipments of Hazard Classes/Divisions 1.1, 1.2, 1.3, and 1.4 munitions, Class 7 radioactive Yellow Label III, and Class 6.1 and 2.3 Poisonous by Inhalation (PIH) materials not meeting rail service loading requirements. BLs covering shipments of this nature will be annotated with the following statement, "Substitute service not to be used." For rail security requirements, see Chapter 205.
  - c. Leased Equipment. Vehicles used must be leased under a valid long-term agreement signed by the owner/operator and the carrier acknowledging use for transporting HAZMAT. The lease agreement may not be canceled by either party on less than 30-day notice. A short-term lease of less than 30 days will not be used. Vehicle drivers must be full-time employees or under the direct control and responsibility of the company transporting the shipment.
  - d. Rental vehicles. Rental vehicles are prohibited for transport of HAZMAT unless prior approval, in writing, is obtained from the corporate HQs of the rental company.
  - e. Inspection of Vehicles. Prior to loading or unloading vehicles, inspect all vehicles used to transport placarded quantities of HAZMAT IAW 49 CFR and DOD safety regulations using DD Form 626, Motor Vehicle Inspection (Transporting Hazardous Materials) Figure 204-12. See Paragraph G.1 for instructions on completing DD Form 626.
  - f. Transfer or Interchange. Commercial motor carriers will not use military activities as a transfer or interchange point unless authorized by the installation and/or activity CDR and transfer or interchange is deemed essential to national defense or required during emergencies affecting the security and safety of life and property. See Chapter 205 for secure holding information. It is the driver's responsibility to perform a vehicle inspection on the vehicle. The installation is responsible for verifying the vehicle inspection was performed by the driver using the DD Form 626, included in the shipment documentation.
  - g. Accident, Incident, Delays. When shipping HAZMAT, TOs will furnish vehicle drivers with written instructions on a shipping paper to contact the emergency response telephone number first, then notify the consignor and consignee, by the fastest available means, when shipment is:
    - (1) Involved in an accident or incident.
    - (2) Delayed en route for a period of four hours or more for Hazard Class 1, including 1.4 (Categories [CAT] I, II and III), 2.3, 6.1 (PIH) or 7 radioactive materials requiring a Yellow III label.

h. Emergency Response Information:

- (1) Commercial Carrier. HAZMAT emergency response information will be annotated on the BL or shipping paper. If more than one Emergency Response number is required, each number must be annotated before the basic item description. The following emergency response telephone numbers must be annotated on the BL in bold or highlighted letters. See Figure 204-13 and Appendix G, Attachment G-4 for BL preparation instructions.

- (a) For DOD Hazard Class 1 (Explosives) Only:

Call Army Operations Center: 703 697-0218/0219 (COLLECT), DSN: 227-0218  
Ask for "WATCH OFFICER."

- (b) For DOD Nonexplosive HAZMAT Only:

Call: 800 851-8061

At Sea: 804 279-3131 (COLLECT)

- (c) DOD Radioactive Material Only:

Army: 703 697-0218 (COLLECT)

US Air Force: 202 767-4011 (COLLECT)

US Navy/Marine Corps: For Navy/Marine Corps non-Nuclear Propulsion Program Radioactive Material Shipments, use the 24-hour emergency response telephone number provided by the Navy/Marine Corps activity initiating the shipment.

DLA: 717 770-5283 (COLLECT)

For Navy Nuclear Propulsion Program Radioactive Material Shipments, use the 24-hour emergency response telephone number provided by the Navy Nuclear Propulsion program activity initiating the shipment. This number will be annotated on the shipping papers.

- (d) For Oil and Chemical Spills, Reportable Quantities of Hazardous Substances and Marine Pollutants only:

Call National Response Center (NRC) and Terrorist HOTLINE at:

800 424-8802 (Day or Night)

At Sea Call: 202 267-2675 (Collect)

- (e) For secure holding area:

Call the SDDC Operations Center HOTLINE at 800 524-0331.

- (2) MOV/Government Vehicles. HAZMAT emergency response information will be circled on DD Form 836, Figure 204-3. In the case of multiple HAZMAT items on the same form with different emergency response telephone numbers, each phone number will be annotated below or adjacent to the HAZMAT item to which they apply.

4. Rail Movement Requirements:

- a. To comply with 49 CFR § 174.104, Division 1.1 or 1.2 (Explosive) Materials; Car Selection, Preparation, Inspection, and Certification, each rail car used to transport Hazard Class/Divisions 1.1 and 1.2 must have a three-part car certificate (provided by the carrier) prior to loading, completed in triplicate by the rail carrier. Ensure that the railroad representative receives a copy of the shipping documents, papers, and emergency response information for the train crew prior to release.
- b. Shipments of Hazard Class/Divisions 1.1, 1.2, 1.3, and 1.4, must be properly sealed, upper rail locks secured, and the BL annotated with seal numbers.

5. Air Movement Requirements:

- a. Commercial air shipments are permitted under the provisions of ICAO Technical Instructions, IATA Dangerous Goods Regulation, and 49 CFR Section 175. A shipper will complete a Shipper's Declaration for Dangerous Goods, Figure 204-7, for HAZMAT moving by commercial airlift.
- b. Contract cargo air carriers may be used IAW DOT-E 7573 and DOT-E 9232.
- c. Military air shipments must meet the requirements of AFMAN 24-204(I)/TM 38-250/MCO P4030.19I/NAVSUP Pub 505/DLAI 4145.3/DCMAD1, CH 3.4 (HM24). A shipper will complete a Shipper's Declaration for Dangerous Goods, Figure 204-7, for HAZMAT moving by military-controlled aircraft.

6. Water Movement Requirements:

- a. Shippers by water will use the Multimodal Dangerous Goods Form, Figure 204-14, for the shipment of HAZMAT IAW guidelines. This form is commercially available. Complete and sign three copies of the form:
  - (1) One form to be retained by the shipper.
  - (2) Place one form in a waterproof envelope and attach to the number one piece of the shipment.
  - (3) One form attached to the inside door of the container or conveyance.
- b. For containerized shipments, copies of the Multimodal Dangerous Goods Form, Figure 204-14, will be placed in water proof envelopes and attached to the inside and the outside door of the container. See Table 204-1 for instructions on how to complete a Multimodal Dangerous Goods Form.
- c. Ensure the REPSHIP is forwarded to the consignee (receiver) by the consignor (shipper) IAW Chapter 205, Paragraph L of this regulation.
- d. The Multimodal Dangerous Goods Form, Figure 204-14, or DD Form 836, Figure 204-3 (Military or non-commercial movement) and the DD Form 2781, Container Packing Certificate or the Vehicle Packing Declaration, Figure 204-15, is required for each cargo transport unit or vehicle containing HAZMAT if regulated HAZMAT is packed within.

- NOTE:** A DD Form 2781, Figure 204-15, Container Vehicle Packing Certificate or Vehicle Packing Declaration, may be used. This form will also serve as guide when packing the container or vehicle. A copy of this form or similar document must be signed and will be made available to regulatory authorities upon their request.
- e. Each ship carrying dangerous goods must have a special list or manifest listing the HAZMAT and the location of the HAZMAT. A detailed stowage plan, which identifies by class and sets out the location of all HAZMAT on board, may be used in place of a special list or manifest. A copy of one of these documents will be made available to regulatory authorities upon request.
  - f. Containers carrying hazardous cargo, destined for carriage aboard a DOD-owned/DOD-chartered ship must be placarded and have a detailed contents packing list with hazardous cargo documentation affixed on the inside of the door for protection from inclement weather.
  - g. Prior to packing the container and signing the unit packing certification (declaration), the person packing the items must have a properly prepared Multimodal Dangerous Goods Form for all HAZMAT to be packed.
  - h. Where there is due cause to suspect that a freight container or road vehicle in which the HAZMAT is packed is not in compliance with the requirements or where a container packing or vehicle packing declaration is not available, the freight container or vehicle will not be accepted for shipment.

## G. FORMS

1. DD Form 626, Figure 204-12:
  - a. The shipping activity must prepare a DD Form 626 before any vehicles are used for transportation of placarded amounts of HAZMAT on public highways. All spaces on the DD Form 626 must be completed for MOV/Government vehicles. Additional pages may be used if necessary. Shipments will not be tendered if any unsatisfactory items are noted and not corrected.
  - b. The receiving activity must complete the destination portion of the DD Form 626 before a motor vehicle containing a shipment of HAZMAT is accepted for delivery. However, if a vehicle arrives at a receiving point with deficiencies, that vehicle will not be put back on the highway and will be unloaded. Reports will be made.
  - c. DD Form 626 is divided into the following three sections:
    - (1) Section I: Documentation. Verify required documentation for all vehicles and drivers.
    - (2) Section II: Mechanical Inspection.
      - (a) MOV/Government vehicles. DOD inspectors must perform a detailed mechanical inspection on all Government/MOV vehicles transporting HAZMAT on public highways. Item 12g, fire extinguisher requirements, applies both to commercial and MOV/Government vehicles.
      - (b) Commercial Vehicles. If commercial vehicles have a current Commercial Vehicle Safety Alliance (CVSA) sticker, DOD inspectors may perform a cursory inspection



verifying that at a minimum the following are operational: headlights, taillights, brakelights, and windshield wipers. Also, DOD inspectors may verify that the fire extinguishers are charged, no fluids are leaking (visibly), tires are properly inflated and they are not "balding." If defects are noted during a cursory inspection, a detailed inspection will be performed on commercial vehicles using the DD Form 626. The activity may perform a detailed inspection at their option even if a current CVSA sticker is present. Naval activities are required to perform a detailed inspection using the DD Form 626.

- (3) Section III: Post Loading Inspection. Applies to commercial and MOV/Government vehicles.
  - d. Deficiencies that are discovered during inspection and are corrected before loading or unloading of the vehicle will be entered in the "Remarks" column opposite the proper item. Only deficiency-free vehicles will be accepted for loading. The carrier must correct deficiencies before vehicles are permitted to enter sensitive or restricted areas.
  - e. A copy of the DD Form 626 will be retained by the inspecting activity IAW Service/Agency directives. For all shipments, the original will be given to the vehicle driver at origin for delivery to the consignee. For a deficient commercial vehicle that has been rejected from loading or unloading or if the driver of the vehicle has been found unsatisfactory, one copy will be sent to each of the following:
    - (1) Nearest DOT field office.
    - (2) Carrier home office.
    - (3) SDDC Operations Center, ATTN: SDG3-GD, 661 Sheppard Place, Ft. Eustis, VA 23604-1644.
2. DD Form 836, Figure 204-3, (to be used for HAZMAT shipped in military vehicle by highway movements).
- a. When shipping papers are required by 49 CFR, a DD Form 836 must be used to provide emergency response information for all government vehicles transporting HAZMAT. If more than one Emergency Response number is required, each number must be annotated on the DD Form 836 in bold, highlighted letters or circle. Emergency response instructions will provide information, as required, to enable the driver to protect self, lading, vehicle, and any other life or property in the vicinity from hazards associated with accidents or incidents. Additional information as required by 49 CFR, this regulation, and DOD Component will be annotated.
  - b. Drivers must use evacuation distances specified in the DOT Emergency Response Guidebook, latest revision, which the driver is required to carry.
  - c. The origin government or military driver will be instructed to keep DD Form 836 in the vehicle while transporting HAZMAT and to transfer it to each successive driver for delivery to the consignee.
  - d. When the Security Escort Vehicle Service (SEV) is used, personnel performing the service will be provided with a duplicate copy of the DD Form 836.

- e. DD Form 836 may be used from origin to destination when military organic vehicles convoy a unit's ammunition basic loads and other regulated HAZMAT via public highway to the seaport to be ultimately loaded into military vessels (e.g., battleships, destroyers, submarine, aircraft carriers). In this case, the DD 836 will serve as both a shipping paper on public highway and military vessel HAZMAT documentation. For final movement by commercial vessel, the DD Form 836 will only apply via highway and will not suffice as vessel documentation; a unit will use the Multimodal Dangerous Goods Form, Figure 204-14 from the SPOE to the final destination.

**NOTE:** HN regulations will apply OCONUS.

## H. EXEMPTIONS, COE, CAA, AND SPECIAL APPROVALS

1. Procedures for applying for DOT-E, CAAs, COEs, Special Approvals and their renewals are prescribed in DLAD 4145.41/AR 700-143/AFJI 24-210/NAVSUPINST 4030.55B/MCO 4030.40B, Packaging of Hazardous Material.
  - a. Requests for exemptions and CAAs will be submitted through the DOD Component (listed in Table 204-2 and Table 204-3 to the SDDC Operations Center. Requests for COEs will be submitted to the DOD Component listed in Table 204-4. DOD Components will:
    - (1) Submit requests for DOT-E, CAA, and Special Approvals, in writing (in triplicate) or by approved electronic means through the DOD Component, at least 120 days prior to requested effective date to the SDDC Operations Center, ATTN: SDSA, 661 Sheppard Place, Ft. Eustis, VA 23604-1644.
    - (2) Submit the request for renewal of CAA in writing (in triplicate) or by approved electronic means through the DOD Component, at least 120 days prior to the expiration date of CAA to the SDDC Operations Center.
    - (3) Submit the request for renewal for DOT-E in writing (in triplicate) or by approved electronic means through the DOD Component, at least 120 days prior to the expiration date of exemption to the SDDC Operations Center.
    - (4) Submit Safety submissions to [nvvsafety@sddc.army.mil](mailto:nvvsafety@sddc.army.mil).
2. Exemptions. A DOT-E provides relief from specific requirements of 49 CFR. Exemptions are available on the DOT web site <http://hazmat.dot.gov/exsys.htm>.
3. A COE is an approval issued IAW procedures prescribed in DLAD 4145.41/AR 700-143/AFJI 24-210/NAVSUPINST 4030.55B/MCO 4030.40B, Packaging of Hazardous Materials, that the proposed packaging for shipment of HAZMAT either equals or exceeds the requirements of 49 CFR, Parts 100-180. Each container will be marked with the COE number IAW MIL-STD-129. Mark the COE number on shipping papers, ATCMD/TCMD, and exterior containers. Additional information or instructions provided by COE will be complied with and a copy of the COE must be with the shipment. DOD Components will forward copies of all COEs to the SDDC Operations Center, ATTN: SDG3-DF, 661 Sheppard Place, Ft. Eustis, VA 23604-1644.
4. A CAA is a written approval stating the competent authority has reviewed the Explosives (EX) hazard classification or HAZMAT packaging; that it meets the UN standards; and that it is approved for transportation. For HAZMAT packaging, CAA is required when the UN standards



or 49 CFR specifies the packaging must be IAW the shipper's national competent authority, when the package of materials exceeds the non-bulk packaging criteria, or when the packaging conflicts with the prescribed packaging of the modal regulations. The DOT is the only recognized competent authority for the US. Whenever a CAA is used, the shipping papers must be annotated with the CAA number. Additional information and instructions provided by the CAA will be complied with and a copy must be attached to the shipping papers.

5. Annual Competent Authority Approval/ DOT Exemption Usage Reporting. 49 CFR requires submission of an annual Usage Report to the Service/Agency component. Each Service/Agency component will submit the consolidated Exemption Usage Report (RCS SDDC-158), quarterly to the SDDC Operations Center, at the beginning of January, April, July, and October. The report will contain the following data:
  - a. DOT-E/Packaging CAA number.
  - b. Number of shipments made under the exemption/packaging CAA.
  - c. Facts pertaining to any accident or incident involving a shipment made using the exemption/packaging CAA.
6. When it is apparent that a shipment for which an exemption has been issued will not be completed before an exemption expires, a request for extension will be submitted through the DOD Component to SDDC, at least 120 days prior to the exemption expiration date. Upon receipt of renewal request, SDDC will take action to obtain a new expiration date and will advise the requester accordingly.

**DOD HAZMAT Focal Points**  
**DOD Liaison to the DOT and other Federal Agencies**

For all DOD HAZMAT interpretations and information to be forwarded to DOT or to other outside agencies, contact:

Commander  
Military Surface Deployment and Distribution Command Operations Center  
ATTN: SDG3-GD-BP (Mr. C.E. Radford)  
Commercial: 757 878-8040; DSN: 826-8040  
Commercial Fax: 757 878-7422; DSN: 826-7422  
ATTN: SDG3-GD-BP (Mrs. Gwenevere Marshall)  
Commercial: 757 878-7482; DSN: 826-7482  
Commercial Fax: 757 878-7422; DSN: 826-7422  
ATTN: SDG3-GD-BP (Mrs. Lisa Taylor)  
Commercial: 757 878-8203; DSN: 826-8203  
Commercial Fax: 757 878-7422; DSN: 826-7422  
e-mail: [nnvhazmat@sddc.army.mil](mailto:nnvhazmat@sddc.army.mil)

For all DOD Safety interpretations and information to be forwarded to DOT or to other outside agencies, contact:

Commander  
Military Surface Deployment and Distribution Command Operations Center  
ATTN: SDSA (Mr. Joseph Dugan)  
Commercial: 757 878-8294; DSN: 826-8294  
Commercial Fax: 757 878-8205; DSN: 826-8205  
e-mail: [nnvsafety@sddc.army.mil](mailto:nnvsafety@sddc.army.mil)

**Figure 204-1. DOD HAZMAT Focal Points**

## **DOD SERVICES HAZARD MATERIAL FOCAL POINTS**

**NOTE:** For Services HAZMAT inquiries and interpretations, contact the POCs identified below. Units and subordinate activities are prohibited from contacting DOT or outside agencies directly. Service POCs will forward through SDDC to DOT or to other outside agencies contact for coordination:

### **ARMY**

Chief  
US Army Logistics Support Activity  
Packaging, Storage, and Containerization Center  
Attn: AMXLS-AT (Mr. Bill Craze/Ms. Sandy Pizzuti)  
11 Hap Arnold Blvd  
Tobyhanna PA 18466-5097  
DSN: 795-7070/7682/6622  
Commercial: 570 895-7070/7682/6622

### **NAVY**

Commanding Officer  
Naval Ordnance Safety and Security Activity  
Attn: Code N73  
(Mr. Thomas Heitzmann HAZMAT Classification)  
Farragut Hall, Building D323  
23 Strauss Avenue  
Indian Head, MD 20640-5555  
Commercial: 301 744-6043/6056  
DSN: 354-6043/6056  
E-mail: [thomas.heitzmann@navy.mil](mailto:thomas.heitzmann@navy.mil)

Attn: Code N732  
(Mr. Ed Walseman, HAZMAT Traffic Management)  
Commercial: 301 744-6021  
DSN: 354-6021  
E-mail: [ed.walseman@navy.mil](mailto:ed.walseman@navy.mil)

### **DLA**

Defense Logistics Agency, Attn: J3733  
(Ms. Betty Yanowsky Slanta)  
8725 John J. Kingman Road, Suite 4234  
Fort Belvoir, VA 22060-6221  
DSN: 427-3638  
Commercial: 703 767-3638  
e-mail: [trans@hq.dla.mil](mailto:trans@hq.dla.mil)

### **AIR FORCE**

AFMC LSO/LOT  
Attn: Mr. Mark Ferguson/Ms. Tonita Davis  
5215 Thurlow Street, Suite 5  
Bldg 70, Area C  
Wright-Patterson AFB, OH 45433-5540  
Commercial: 937 257-1984/4503  
DSN: 787-1984/4503  
E-mail: [mark.ferguson@wpafb.af.mil](mailto:mark.ferguson@wpafb.af.mil)  
E-mail: [tonita.davis@wpafb.af.mil](mailto:tonita.davis@wpafb.af.mil)

### **MARINE**

Commandant of the Marine Corps  
HQMC USMC LPCD  
2 Navy Annex, Room 2309  
Attn: LPC-2 (Mr. Michael Topolosky or Mr. Oliver Bell)  
Washington, DC 20380-1775  
DSN: 225-7930 ext 2409 or DSN 225-7851  
Commercial: 703 695-7930 ext 2409 or DSN 225-7851  
e-mail: [topoloskym@hqmc.usmc.mil](mailto:topoloskym@hqmc.usmc.mil)  
e-mail: [bello@hqmc.usmc.mil](mailto:bello@hqmc.usmc.mil)

### **DEFENSE CONTRACT MANAGEMENT AGENCY**

Defense Contract Management Agency  
Attn: DCMA-OCT  
6350 Walker Lane, Suite 300  
Alexandria, VA 22310-3241  
DSN: 328-0957  
Commercial: 703 428-0957

**Figure 204-2. DOD Services Hazard Material Focal Points**

**HAZMAT//HAZMAT//HAZMAT//HAZMAT//HAZMAT//HAZMAT**

DANGEROUS GOODS SHIPPING PAPER/DECLARATION AND EMERGENCY RESPONSE INFORMATION FOR HAZARDOUS MATERIALS TRANSPORTED BY GOVERNMENT VEHICLES								
1.a. NOMENCLATURE: b. MODEL NO.: c. BUMPER NO.:				d. CONTAINER SEAL NO.: e. SERIAL NO.: f. TCN NUMBER:				
2. SHIPPER NAME/ADDRESS/TELEPHONE NO. /DATE OF PREPARATION							3. PAGE _____ OF PAGES	
4. CARGO (To be completed by the unit or shipper Transportation Office (TO))								
PROPER SHIPPING NAME (Include RO, Technical Names, Additional Information per 49 CFR 172.203, as required.) a.	HAZARD CLASS/ DIVISION b.	SUBSIDIARY HAZARD c.	UN/ID NUMBER d.	PACKING GROUP (PG) e.	PACKAGES NUMBER f.      KIND g.		TOTAL NET QUANTITY h.	TOTAL AMMO (NEW) i.
5. CONSIGNEE NAME								
6. REMARKS								
7.a. COPY OF EMERGENCY RESPONSE GUIDE NUMBER(S)								
b. EMERGENCY NOTIFICATION. In all cases of accident, breakdown or fire, promptly call emergency assistance telephone number(s) in Item 7c below and then shipper and/or consignee in Item 2 above, in that order.								
c. 24-HOUR EMERGENCY ASSISTANCE TELEPHONE NUMBERS:								
DOD NON-EXPLOSIVE HAZMAT: 1-800-851-8061 1-804-279-3131 (FOR CALLS FROM SHIPS AT SEA)	DOD HAZ CLASS 1 (EXPLOSIVES) ONLY: (703) 697-0218 or 0219 (COLLECT) OR DSN 227-0218 (WATCH OFFICER)	CHEMICAL/BIOLOGICAL WARFARE MATERIAL DUTY HOURS: DSN 584-3044, 584-7211, 584-6455, Comm. (410) 436-3044, (410) 436-7211, (410) 436-6455 AFTER DUTY HOURS: DSN 584-2148, Comm. (410) 436-2148 (Ask for TEU S3)	SECURE HOLDING: 1-800-524-0331 OIL AND CHEMICAL SPILLS: NATIONAL RESPONSE CENTER (NRC) AND TERRORIST HOTLINE: 1-800-424-8802 AT SEA: 202-267-2675 (COLLECT)	DOD RADIOACTIVE MATERIALS: ARMY: (703) 697-0218 (COLLECT) USAF: (202) 767-4011 (COLLECT) USN/MC: Use 24-hour emergency response phone number provided by USN/MC activity initiating shipment. DLA: (717) 770-5283 (COLLECT)				
8. SHIPPER'S CERTIFICATION This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the regulations of the Department of Transportation.								
a. TYPE OR PRINT NAME OF SHIPPER CERTIFIER				c. SIGNATURE(S) OF VEHICLE OPERATOR(S)				
b. SIGNATURE OF SHIPPER CERTIFIER AND DATE								

DD FORM 836, NOV 2004

PREVIOUS EDITION IS OBSOLETE.

**HAZMAT//HAZMAT//HAZMAT//HAZMAT//HAZMAT//HAZMAT**

Figure 204-3. DD Form 836, Dangerous Goods Shipping Paper/Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles

# HAZMAT INST//HAZMAT INST//HAZMAT INST//HAZMAT INST

## INSTRUCTIONS FOR COMPLETING DD FORM 836, DANGEROUS GOODS SHIPPING PAPER/DECLARATION AND EMERGENCY RESPONSE INFORMATION FOR HAZARDOUS MATERIALS TRANSPORTED BY GOVERNMENT VEHICLES

### GENERAL

DD Form 836 will be completed by a **qualified\*** individual from a transportation office, unit or other organization offering Hazardous Material (HAZMAT) for transportation in areas accessible to the general public.

\*An individual is considered qualified to complete and sign (certify) DD Form 836, only after having satisfactorily completed either a DOD authorized HAZMAT Course from one of the DOD-approved schools listed in the Defense Transportation Regulation (DTR) or military technical specialist training in accordance with the DTR, Chapter 204, Paragraph D. This person will be appointed in writing by the activity or unit commander, to include scope of authority and expiration date of training.

**Item 1.** Fill in the nomenclature, model number, TCN, and bumper number/serial number of the vehicle/container. For containers carrying sensitive or classified items, the container security seal is required.

**Item 2.** Enter the shipper's address and telephone number of the HAZMAT origination and date of preparation. Telephone number is for **NOTIFICATION PURPOSES ONLY**. Emergency assistance will be obtained from the **24-HOUR EMERGENCY ASSISTANCE TELEPHONE NUMBER(S)** in Item 7c. on the first page of this form.

**Item 3.** Self-explanatory.

**Item 4a.** Enter the proper shipping name of the HAZMAT and if applicable include the technical name. (Enter additional information as required by 49 CFR, 172.203 - Example: RQ, Inhalation Hazard.)  
**NOTE:** In the case of multiple HAZMAT items on the same form with different emergency response telephone numbers, each phone number will be annotated below or adjacent to the HAZMAT item to which they apply.

**Item 4b.** Enter the Hazard class/division and, if applicable, the Compatibility Group.

**Item 4c.** Enter the subsidiary hazard of the material if applicable.

**Item 4d.** Enter the identification numbers, e.g., NA, UN. The letters "UN" or "NA" must be noted. "NA" may not be used for OCONUS.

**Item 4e.** Enter the packing group (e.g. I, II, or III) of the HAZMAT.

**Item 4f.** Enter the total number of packages/items.

**Item 4g.** Enter the type of packaging (e.g., container, box, drum, pallet), the HAZMAT is packed in.

**Item 4h.** Enter the total net quantity for non-explosive material in metric measure. US measure may be added in parentheses underneath the metric measure. For ammunition, enter the total number of rounds/articles. Exception: Net total quantity is not required for bulk packages, empty packages, and cylinders of Class 2.

**Item 4i.** Enter total Net Explosive Weight (NEW) in kilograms for ammunition/ explosive (Class 1 items). NEW information is found in the Joint Hazard Classification System (JHCS) in the entry for the NEW (Transportation Quantity). Example: 27.231 kg.

**Item 5.** Enter the six digit Department of Defense Activity Address Codes (DODAAC) and/or the clear geographical location of the ultimate consignee of the HAZMAT shipment. If this is a unit move, the unit name will be the same as that for Item 2.) Additional information if needed can be annotated in Item 6.

**Item 6.** Additional handling instructions/information.

**Item 7a.** Enter Emergency Response Guide Number.

**Item 7b.** Self-explanatory. Call 24-hour Emergency Response number(s) circled in Item 7c first and then shipper.

**Item 7c.** Circle emergency response telephone number.  
**NOTE:** For Radioactive Material Shipments only: Circle numbers and cross out those numbers that do not apply, e.g., Army shipments - cross out all but Army's radioactive response number.

**Item 8.** Certifying person must type or print name legibly in 8a. and must sign in writing (longhand) and add the date signed in 8b.

**Item 8c.** - Self explanatory.

### NOTES:

1. Units returning from firing range must have a certified or qualified person to ensure that all HAZMAT is properly repackaged and secured (i.e. braced, blocked, and tied down) prior to being transported back to base. **See exception below.**

2. Completion of a new DD Form 836 is not required. Original DD Form 836 may be used provided that:

a. Change Item 2 (Date Prepared).

b. Change Item 4. (Cargo):

(i) HAZMAT used will be deleted from form by crossing out or lining through.

(ii) HAZMAT that remains, but is in different quantities, will have the correct amounts entered in the section(s).

### EXCEPTION:

c. Change Item 8b.:

(i) A qualified individual (if available) must sign in writing (longhand). If a qualified individual is not available, then the Officer-In-Charge (OIC) or Non-Commissioned Officer-In-Charge (NCOIC) must sign in writing (longhand) to verify that the above procedures have been performed for the return trip to base.

(ii) Cross out original signature if different certifier will be used.

DD FORM 836 (BACK), NOV 2004

# HAZMAT INST//HAZMAT INST//HAZMAT INST//HAZMAT INST

**Figure 204-3. DD Form 836, Dangerous Goods Shipping Paper/Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles (Cont'd)**



<b>GUIDE 112 EXPLOSIVES* - DIVISION 1.1, 1.2, 1.3, 1.5 OR 1.6; CLASS A OR B</b>	
<b>POTENTIAL HAZARDS</b>	
<b>FIRE OR EXPLOSIVE</b>	<ul style="list-style-type: none"> <li>• <b>MAY EXPLODE AND THROW FRAGMENTS 500 meters (1/3 MILE) OR MORE IF FIRE REACHES CARGO.</b></li> <li>• <b>*For information on "Compatibility Group" letters, refer to Glossary section.</b></li> </ul>
<b>HEALTH</b>	<ul style="list-style-type: none"> <li>• Fire may produce irritating, corrosive and/or toxic gases.</li> </ul>
<b>PUBLIC SAFETY</b>	
	<ul style="list-style-type: none"> <li>• <b>CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.</b></li> <li>• Isolate spill or leak area immediately for at least 500 meters (1/3 mile) in all directions.</li> <li>• Move people out of line of sight of the scene and away from windows.</li> <li>• Keep unauthorized personnel away</li> <li>• Stay upwind</li> <li>• Ventilate closed spaces before entering.</li> </ul>
<b>PROTECTIVE CLOTHING</b>	<ul style="list-style-type: none"> <li>• Wear positive pressure self-contained breathing apparatus (SCBA).</li> <li>• Structural firefighters' protective clothing will only provide limited protection.</li> </ul>
<b>EVACUATION</b>	
<b>Large Spill</b>	<ul style="list-style-type: none"> <li>• <b>Consider initial evacuation for 800 meters (1/2 mile) in all directions.</b></li> </ul>
<b>Fire</b>	<ul style="list-style-type: none"> <li>• If rail car or trailer is involved in a fire and heavily encased explosives such as bombs or artillery projectiles are suspected, ISOLATE for 1600 m (1 mile) in all directions; also, initiate evacuation including emergency responders for 1600 m (1 mile).</li> <li>• When heavily encased explosives are not involved, evacuate the area for 800 meters (1/2 mile) in all directions.</li> </ul>
<b>EMERGENCY RESPONSE</b>	
<b>FIRE</b>	
<b>CARGO Fires</b>	<ul style="list-style-type: none"> <li>• <b>DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!</b></li> <li>• Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn.</li> <li>• Do not move cargo or vehicle if cargo has been exposed to heat.</li> </ul>
<b>TIRE or VEHICLE Fires</b>	<ul style="list-style-type: none"> <li>• <b>Use plenty of water – FLOOD it! If water is not available, use CO2, dry chemical or dirt.</b></li> <li>• If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.</li> <li>• Pay special attention to tire fires as re-ignition may occur. Stand by with extinguisher ready.</li> </ul>
<b>SPILL OR LEAK</b>	<ul style="list-style-type: none"> <li>• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).</li> <li>• All equipment used when handling the product must be grounded.</li> <li>• Do not touch or walk through spilled material</li> <li>• DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 meters (330 feet) of ELECTRIC DETONATORS.</li> <li>• <b>DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.</b></li> </ul>
<b>FIRST AID</b>	<ul style="list-style-type: none"> <li>• Move victim to fresh air.</li> <li>• Call 911 or emergency medical service.</li> <li>• Apply artificial respiration if victim is not breathing.</li> <li>• Administer oxygen if breathing is difficult.</li> <li>• Remove and isolate contaminated clothing and shoes.</li> <li>• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.</li> <li>• Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.</li> </ul>

**Figure 204-4. Guide 112 (Explosives\* - Division 1.1, 1.2, 1.3, 1.5 or 1.6; Class A or B)**

<b>GUIDE 114 EXPLOSIVES* - DIVISION 1.4; CLASS C</b>
<b>POTENTIAL HAZARDS</b>
<p><b>FIRE OR EXPLOSIVE</b></p> <ul style="list-style-type: none"> <li>• <b>MAY EXPLODE AND THROW FRAGMENTS 500 meters (1/3 MILE) OR MORE IF FIRE REACHES CARGO.</b></li> <li>• <b>*For information on "Compatibility Group" letters, refer to Glossary section.</b></li> </ul> <p><b>HEALTH</b></p> <ul style="list-style-type: none"> <li>• Fire may produce irritating, corrosive and/or toxic gases.</li> </ul>
<b>PUBLIC SAFETY</b>
<ul style="list-style-type: none"> <li>• <b>CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.</b></li> <li>• Isolate spill or leak area immediately for at least 100 meters (330 feet) in all directions.</li> <li>• Move people out of line of sight of the scene and away from windows.</li> <li>• Keep unauthorized personnel away</li> <li>• Stay upwind</li> <li>• Ventilate closed spaces before entering.</li> </ul> <p><b>PROTECTIVE CLOTHING</b></p> <ul style="list-style-type: none"> <li>• Wear positive pressure self-contained breathing apparatus (SCBA).</li> <li>• Structural firefighters' protective clothing will only provide limited protection.</li> </ul> <p><b>EVACUATION</b></p> <p><b>Large Spill</b></p> <ul style="list-style-type: none"> <li>• <b>Consider initial evacuation for 250 meters (800 feet) in all directions.</b></li> </ul> <p><b>Fire</b></p> <ul style="list-style-type: none"> <li>• If rail car or trailer is involved in a fire, ISOLATE for 500 meters (1/3 mile) in all directions; also initiate evacuation including emergency responders for 500 meters (1/3 mile) in all directions.</li> </ul>
<b>EMERGENCY RESPONSE</b>
<p><b>FIRE</b></p> <p><b>CARGO Fires</b></p> <ul style="list-style-type: none"> <li>• <b>DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!</b></li> <li>• Stop all traffic and clear the area for at least 500 meters (1/3 mile) in all directions and let burn.</li> <li>• <b>Do not move cargo or vehicle if cargo has been exposed to heat.</b></li> </ul> <p><b>TIRE or VEHICLE Fires</b></p> <ul style="list-style-type: none"> <li>• <b>Use plenty of water – FLOOD it! If water is not available, use CO2, dry chemical or dirt.</b></li> <li>• If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.</li> <li>• Pay special attention to tire fires as re-ignition may occur. Stand by with extinguisher ready.</li> </ul> <p><b>SPILL OR LEAK</b></p> <ul style="list-style-type: none"> <li>• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).</li> <li>• All equipment used when handling the product must be grounded.</li> <li>• Do not touch or walk through spilled material</li> <li>• DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 meters (330 feet) of ELECTRIC DETONATORS.</li> <li>• <b>DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.</b></li> </ul> <p><b>FIRST AID</b></p> <ul style="list-style-type: none"> <li>• Move victim to fresh air.</li> <li>• Call 911 or emergency medical service.</li> <li>• Apply artificial respiration if victim is not breathing.</li> <li>• Administer oxygen if breathing is difficult.</li> <li>• Remove and isolate contaminated clothing and shoes.</li> <li>• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.</li> <li>• Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.</li> <li>• Packages bearing the 1.4S label or packages containing material classified as 1.4S are designed or packaged in such a manner that when involved in a fire, may burn vigorously with localized detonations and projection of fragments.</li> <li>• Effects are usually confined to immediate vicinity of packages.</li> <li>• If fire threatens cargo area containing packages bearing the 1.4S label or packages containing material classified as 1.4S, consider isolating at least 15 meters (50 feet) in all directions. Fight fire with normal precautions from a reasonable distance.</li> </ul>

**Figure 204-5. Guide 114 (Explosives\* - Division 1.4; Class C)**

GUIDE 138 SUBSTANCES – WATER-REACTIVE (Emitting Flammable Gases)	
POTENTIAL HAZARDS	
<p><b>FIRE OR EXPLOSIVE</b></p> <ul style="list-style-type: none"> <li>• Produce flammable gases on contact with water.</li> <li>• May ignite on contact with water or moist air.</li> <li>• Some react vigorously or explosively on contact with water.</li> <li>• May be ignited by heat, sparks or flames.</li> <li>• May re-ignite after fire is extinguished.</li> <li>• Some are transported in highly flammable liquids.</li> <li>• Runoff may create fire or explosive hazard.</li> </ul> <p><b>HEALTH</b></p> <ul style="list-style-type: none"> <li>• Inhalation or contact with vapors, substance, or decomposition products may cause severe injury or death.</li> <li>• May produce corrosive solutions on contact with water.</li> <li>• Fire will produce irritating, corrosive and/or toxic gases.</li> <li>• Runoff from fire control may cause pollution.</li> </ul>	
PUBLIC SAFETY	
<ul style="list-style-type: none"> <li>• <b>CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.</b></li> <li>• Isolate spill or leak area immediately for at least 50 to 100 meters (160 to 330 feet) in all directions.</li> <li>• Keep unauthorized personnel away.</li> <li>• Stay upwind.</li> <li>• Keep out of low areas.</li> <li>• Ventilate the area before entry.</li> </ul> <p><b>PROTECTIVE CLOTHING</b></p> <ul style="list-style-type: none"> <li>• Wear positive pressure self-contained breathing apparatus (SCBA).</li> <li>• Structural firefighters' protective clothing will only provide limited protection.</li> </ul> <p><b>EVACUATION</b></p> <p><b>Large Spill</b></p> <ul style="list-style-type: none"> <li>• Consider initial downwind evacuation for at least 250 meters (800 feet).</li> </ul> <p><b>Fire</b></p> <ul style="list-style-type: none"> <li>• If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.</li> </ul>	
EMERGENCY RESPONSE	
<p><b>FIRE</b></p> <ul style="list-style-type: none"> <li>• <b>DO NOT USE WATER OR FOAM.</b></li> </ul> <p><b>Small Fires</b></p> <ul style="list-style-type: none"> <li>• Dry chemical, soda ash, lime or sand.</li> </ul> <p><b>Large Fires</b></p> <ul style="list-style-type: none"> <li>• DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.</li> <li>• Move containers from fire area if you can do it without risk.</li> </ul> <p><b>Magnesium Fires</b></p> <ul style="list-style-type: none"> <li>• DRY sand, sodium chloride powder, graphite powder or Met-L-X? powder.</li> </ul> <p><b>Lithium Fires</b></p> <ul style="list-style-type: none"> <li>• DRY sand, sodium chloride powder, graphite powder, copper powder or Lith-X? powder.</li> </ul> <p><b>Fire involving Tanks or Car/Trailer Loads</b></p> <ul style="list-style-type: none"> <li>• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.</li> <li>• Do not get water inside containers.</li> <li>• Cool containers with flooding quantities of water until well after fire is out.</li> <li>• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.</li> <li>• ALWAYS stay away from tanks engulfed in fire.</li> </ul> <p><b>SPILL OR LEAK</b></p> <ul style="list-style-type: none"> <li>• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).</li> <li>• Do not touch or walk through spilled material</li> <li>• Stop leak if you can do it without risk.</li> <li>• Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material</li> <li>• <b>DO NOT GET WATER on spilled substance or inside containers.</b></li> </ul> <p><b>Small Spills</b></p> <ul style="list-style-type: none"> <li>• Cover with DRY earth, DRY sand, or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.</li> <li>• Dike for later disposal; do not apply water unless directed to do so.</li> </ul> <p><b>Powder Spills</b></p> <ul style="list-style-type: none"> <li>• Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.</li> <li>• <b>DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.</b></li> </ul> <p><b>FIRST AID</b></p> <ul style="list-style-type: none"> <li>• Move victim to fresh air.</li> <li>• Call 911 or emergency medical service.</li> <li>• Apply artificial respiration if victim is not breathing.</li> <li>• Administer oxygen if breathing is difficult.</li> <li>• Remove and isolate contaminated clothing and shoes.</li> <li>• In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.</li> <li>• Keep victim warm and quiet.</li> <li>• Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.</li> </ul>	

Figure 204-6. Guide 138 (Substances – Water-Reactive)



SHIPPER'S DECLARATION FOR DANGEROUS GOODS							
<b>Shipper</b> TRAFFIC MANAGEMENT OFFICE 1000 CHIDLAW ROAD ELMENDORF AFB, AK 99056	<b>Air Waybill No.</b>  Page 1 of 1 Pages Shipper's Reference Number FB500011703122XXX <i>(optional)</i>						
<b>Consignee</b> TRAFFIC MANAGEMENT OFFICE HILL AFB, UT 84056							
<i>Two completed and signed copies of this Declaration must be handed to the operator</i>							
<b>TRANSPORT DETAILS</b> <table border="1"> <tr> <td>           This shipment is within the limitations prescribed for:  <i>(delete non-applicable)</i> </td> <td> <b>Airport of Departure</b>            EDF            Elmendorf AFB, AK         </td> </tr> <tr> <td> <table border="1"> <tr> <td>PASSENGER AND CARGO AIRCRAFT</td> <td>           XXXXXX            XXXXXX            XXXXXX            XXXXXX         </td> </tr> </table> </td> <td></td> </tr> </table>	This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i>	<b>Airport of Departure</b> EDF Elmendorf AFB, AK	<table border="1"> <tr> <td>PASSENGER AND CARGO AIRCRAFT</td> <td>           XXXXXX            XXXXXX            XXXXXX            XXXXXX         </td> </tr> </table>	PASSENGER AND CARGO AIRCRAFT	XXXXXX XXXXXX XXXXXX XXXXXX		<b>WARNING</b> Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. This Declaration must not, in any circumstances, be completed and/or signed by a consolidator, a forwarder or an IATA cargo agent.
This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i>	<b>Airport of Departure</b> EDF Elmendorf AFB, AK						
<table border="1"> <tr> <td>PASSENGER AND CARGO AIRCRAFT</td> <td>           XXXXXX            XXXXXX            XXXXXX            XXXXXX         </td> </tr> </table>	PASSENGER AND CARGO AIRCRAFT	XXXXXX XXXXXX XXXXXX XXXXXX					
PASSENGER AND CARGO AIRCRAFT	XXXXXX XXXXXX XXXXXX XXXXXX						
<b>Airport of Destination:</b> Hill AFB, UT	<b>Shipment type:</b> <i>(delete non-applicable)</i> <table border="1"> <tr> <td>NON-RADIOACTIVE</td> <td><del>RADIOACTIVE</del></td> </tr> </table>	NON-RADIOACTIVE	<del>RADIOACTIVE</del>				
NON-RADIOACTIVE	<del>RADIOACTIVE</del>						
<b>NATURE AND QUANTITY OF DANGEROUS GOODS</b> <i>Proper Shipping Name, Class, UN Number or Identification Number, Packing Group (if required), number of packages, packing instructions and all other required information as detailed in Subsections 6.6 and 8.1 of IATA Dangerous Goods Regulations.</i>							
PAINT, 3, UN1263, III // ONE FIBERBOARD BOX X 7.5L // A19.3 // LTD QTY  NICOTINE, 6.1, UN1654, II 1 1A1 X 20L A10.5.5							
<b>Additional Handling Information</b>   <div style="text-align: right;">24 hr. Emergency Contact Tel. No. 800-851-8061</div>							
<b>I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.</b>	<b>Name/Title of Signatory</b> K.C. Davis, Foreman <b>Place and Date</b> Elmendorf AFB, AK 25 Jan 03 <b>Signature</b> <i>(see warning above)</i>						

Figure 204-7. Shipper's Declaration for Dangerous Goods

# **REPSHIP Data Requirements for Individual Shipments of HAZMAT and Inert Component Parts – CONUS to CONUS, CONUS to Overseas Locations, or From All Overseas Locations**

FROM: SHIPPING ACTIVITY

TO: DOMESTIC CUSTOMER OR TRANSSHIPPING ACTIVITY  
CLEARANCE AUTHORITY (OCEAN) OR CUSTOMER SERVICE  
BRANCH (CSB) (AIR) OR CONUS WATER TERMINAL

INFO: SPONSORING SERVICE ACCOUNTABLE SUPPLY ACTIVITY  
ULTIMATE CONSIGNEE/FINAL DESTINATION

SUBJ: REPORT OF SHIPMENT (REPSHIP)

1. SHIPMENT DATE WRITTEN AS A THREE-DIGIT DAY OF THE YEAR (JULIAN).
2. ETA WRITTEN AS A THREE-DIGIT DAY OF THE YEAR (JULIAN) (OBSERVE STANDARD TRANSIT TIME (STT) IF CONUS TRUCK SHIPMENT AND NO RDD IDENTIFIED).
3. REQUIRED DELIVERY DATE (RDD) OR DELIVERY DATE (DD) IF SPECIFIED.
4. CARRIER.
5. BILL OF LADING (BL) NUMBER (NOTES 1, 2, 3).
6. MTX-GS SERVICE NUMBER (NOTES 1, 2, 3).
7. AIR RELEASE NUMBER (NOTES 1, 2, 3) OR FOR SURFACE SHIPMENTS, ETR NUMBER AND VESSEL NAME AND/OR VOYAGE NUMBER.
8. SHIPMENT (CARGO) NAME (EXAMPLE: BOMBS).
9. CONTAINER AND SEAL NUMBER (IF APPLICABLE):
  - a. CONTAINER TCN.
  - b. TOTAL WEIGHT OF CONTENTS
10. CATEGORY (CAT), E.G., CATEGORY I, II, III, IV, U, SECRET, CONFIDENTIAL, NONE.
11. SECURITY RISK CODE (SRC) OR CONTROLLED ITEM INVENTORY CODE (CIIC).
12. TOTAL NET EXPLOSIVE WEIGHT (NEW).
13. HAZARD CLASSIFICATION(S).

## **Notes:**

1. When the conveyance contains more than one shipment unit, repeat the data elements in separately lettered paragraphs for each shipment unit.
2. Cargo for more than one vessel or flight, but shipped to POE in a single conveyance, is included in a single REPSHIP. When cargo for a single vessel is moved to the SPOE in more than one conveyance, repeat all the data elements as above in separate numbered paragraphs for each conveyance or REPSHIP.
3. A separate REPSHIP is used for each mode of shipment to the POE.

**Figure 204-8. REPSHIP Data Requirements for Individual Shipments of HAZMAT and Inert Component Parts - CONUS to CONUS, CONUS to Overseas Locations, or From All Overseas Locations**

**Figure 204-9. DA Form 3161, Request for Issue or Turn-In**

### JMTCA Export Offering

MEMORANDUM FOR JOINT MUNITIONS TRANSPORTATION COORDINATING ACTIVITY (JMTCA)

FROM: Shipper or DOD Component

SUBJECT: Export Offering

1. Document number.
2. Suffix.
3. National Stock Number (NSN).
4. Department of Defense Identification Code (DODIC).
5. Supplemental address (Ship to).
6. Signal code.
7. Nomenclature.
8. Source of supply (shipper).
9. Required Delivery Date (RDD).
10. Issue priority designator (IPD).
11. Project code.
12. Quantity (each).
13. Pieces.
14. Type pack.
15. Weight.
16. Cube.
17. Proper shipping name.
18. International Maritime Dangerous Goods Code, i.e., Hazard Class/Division 1.1, 1.2, 1.3.
19. United Nation's serial number (UNO).
20. Net Explosive Weight (NEW).
21. Sensitivity/classification code.
22. Transportation fund citation.

(Signature Block)

**Figure 204-10. JMTCA Export Offering**

Acknowledgment of Receipt of Ammunition ETRR	
Record Position:	1-3
Data Element Number:	1
Field Title or Entry Instruction:	Document Identifier
Remarks:	R1A
Record Position:	4-16
Data Element Number:	3
Field Title or Entry Instruction:	Requester Identifier
Remarks:	R11
Record Position:	17-22
Data Element Number:	4
Field Title or Entry Instruction:	Shipper
Remarks:	From R11
Record Position:	23
Data Element Number:	Field Title or Entry
Instruction:	Type offer code
Remarks:	A-Ammo, B-Breakbulk, and C-Container
Record Position:	24
Data Element Number:	N/A
Field Title or Entry Instruction:	SDDC Operations Center
Remarks:	SDDC Operations Center
Record Position:	25-29
Data Element Number:	32
Field Title or Entry Instruction:	File Identifier
Remarks:	Assigned by SDDC Operations Center
Record Position:	30-38
Data Element Number:	N/A
Field Title or Entry Instruction:	Acknowledgment of request
Remarks:	N/A
Record Position:	39-46
Data Element Number:	N/A
Field Title or Entry Instruction:	Blank
Record Position:	47-58
Data Element Number:	N/A
Field Title or Entry Instruction:	Specific line number if ammo planning wire
Remarks:	N/A
Record Position:	59-70
Data Element Number:	N/A
Field Title or Entry Instruction:	Blank
Remarks:	N/A
Record Position:	71-78
Data Element Number:	N/A
Field Title or Entry Instruction:	Month, day, and year of acknowledgment
Remarks:	Two positions each: month, day, and year
Record Position:	79-80
Data Element Number:	N/A
Field Title or Entry Instructions:	Always "00"
<b>Note:</b> Data elements are explained in Appendix D.	

**Figure 204-11. Acknowledgment of Receipt of Ammunition ETRR**

MOTOR VEHICLE INSPECTION (TRANSPORTING HAZARDOUS MATERIALS)											
(Read Instructions before completing this form.)											
This form applies to all vehicles which must be marked or placarded in accordance with Title 49 CFR.						1. GOVERNMENT BILL OF LADING/TRANSPORTATION CONTROL NUMBER					
SECTION 1 - DOCUMENTATION				ORIGIN a.				DESTINATION b.			
2. CARRIER/GOVERNMENT ORGANIZATION											
3. DATE/TIME OF INSPECTION											
4. LOCATION OF INSPECTION											
5. OPERATOR(S) NAME(S)											
6. OPERATOR(S) LICENSE NUMBER(S)											
7. MEDICAL EXAMINER'S CERTIFICATE*											
8. (X if satisfactory at origin)								9. CVSA DECAL DISPLAYED ON COMMERCIAL EQUIPMENT			
a. MILITARY HAZMAT ENDORSEMENT				d. ERG OR EQUIVALENT COMMERCIAL:				YES		NO	
b. VALID LEASE*				e. DRIVER'S VEHICLE INSPECTION REPORT*						a. TRUCK/TRACTOR	
c. ROUTE PLAN				f. COPY OF 49 CFR PART 397						b. TRAILER	
SECTION 11 - MECHANICAL INSPECTION											
All items shag be checked on empty equipment prior to loading. Items with an asterisk shag be checked on all incoming loaded equipment.											
10. TYPE OF VEHICLE(S)						11. VEHICLE NUMBER(S)					
12. PART INSPECTED (X as applicable)		ORIGIN (1)		DESTINATION (2)		ORIGIN (1)		DESTINATION (2)		COMMENTS (3)	
		SAT UNSAT		SAT UNSAT		SAT UNSAT		SAT UNSAT			
a. SPARE ELECTRICAL FUSES						k EXHAUST SYSTEM					
b. HORN OPERATIVE						1. BRAKE SYSTEM*					
c. STEERING SYSTEM						m. SUSPENSION					
d. WINDSHIELD/WIPERS						n. COUPLING DEVICES					
e. MIRRORS						o. CARGO SPACE					
f. WARNING EQUIPMENT						p. LANDING GEAR*					
g. FIRE EXTINGUISHER*						q. TIRES, WHEELS, RIMS					
h. ELECTRICAL WIRING						r. TAILGATE/DOORS*					
i. LIGHTS AND REFLECTORS						s. TARPULIN*					
j. FUEL SYSTEM*						t. OTHER (Specify)					
13. INSPECTION RESULTS (X one) ACCEPTED						REJECTED					
(If rejected give reason under "Remarks ". Equipment will be approved if deficiencies are corrected prior to loading.)											
14. SATELLITE MOTOR SURVEILLANCE SYSTEM: (X one) ACCEPTED						REJECTED					
15. REMARKS											
16. INSPECTOR SIGNATURE (Origin)						17. INSPECTOR SIGNATURE (Destination)					
SECTION III - POST LOADING INSPECTION											
This section applies to Commercial and Govern ment/Military vehicles. All items will be checked prior to release of loaded equipment and shall be checked on all incoming loaded equipment.											
		ORIGIN (1)		DESTINATION (2)				ORIGIN (1)		DESTINATION (2)	
		SAT UNSAT		SAT UNSAT				SAT UNSAT		SAT UNSAT	
18. LOADED IAW APPLICABLE SEGREGATION/COMPATIBILITY TABLE OF 49 CIFIR											
19. LOAD PROPERLY SECURED TO PREVENT MOVEMENT											
20. SEALS APPLIED TO CLOSED VEHICLE; TARPULIN APPLIED ON OPEN EQUIPMENT											
21. PROPER PLACARDS APPLIED											
22. SHIPPING PAPERS/DD FORM 836 FOR GOVERNMENT VEHICLE SHIPMENTS											
23. COPY OF DID FORM 626 FOR DRIVER											
24. SHIPPED UNDER DOT EXEMPTION 868											
25. INSPECTOR SIGNATURE (Origin)						26. DRIVER(S) SIGNATURE (Origin)					
27. INSPECTOR SIGNATURE (Destination)						28. DRIVER(S) SIGNATURE (Destination)					

DD FORM 626, SEP 1998 (EG)

PREVIOUS EDITION IS OBSOLETE.

Page 1 of 3 Pages  
Designed using Perform Pro, WHS/D10R, Sep 98

Figure 204-12. DD Form 626, Motor Vehicle Inspection (Transporting Hazardous Materials)



INSTRUCTIONS	
<p><b>SECTION I - DOCUMENTATION</b></p> <p><b>General Instructions.</b></p> <p>All items (2 through 9) will be checked at origin prior to loading. Items with an asterisk (*) apply to commercial operators or equipment only. Only Items 2 through 7 are required to be checked at destination.</p> <p>Items 1 through 5. Self explanatory.</p> <p>Item 6. Enter operator's Commercial Driver's License (CDL) number or Military OF-346 License Number. CDL and OF-346 must have the HAZMAT and other appropriate endorsements IAW Part 383.</p> <p>Item 7. *Enter the expiration date listed on the Medical Examiner's Certificate.</p> <p>Item 8.a. APPLIES TO MILITARY OPERATORS ONLY. Military Hazardous Materials Certification. In accordance with applicable service regulations, ensure operator has been certified to transport hazardous materials.</p> <p>b. *Valid Lease. Shipper will ensure a copy of the appropriate contract of lease is carried in all leased vehicles and is available for inspection. (Defense Transportation Regulation (DTR) requirement.)</p> <p>c. Route Plan. Prior to loading any Hazard Class/Division 1.1, 1.2, or 1.3 (Explosives) for shipment, ensure that the operator possesses a written route plan in accordance with 49 CFR Part 397. Route Plan requirements for Hazard Class 7 (Radioactive) materials are found in 49 CFR 397.101.</p> <p>d. Emergency Response Guidebook (ERG) or Equivalent. Commercial operators must be in possession of an ERG or equivalent document. Shipper will provide applicable ERG page(s) to military operators.</p> <p>e. *Driver's Vehicle Inspection Report. Review the operator's Vehicle Inspection Report. Ensure that there are no defects listed on the report that would affect the safe operation of the vehicle.</p> <p>f. Copy of 49 CFR Part 397. Operators are required by regulation to have in their possession a copy of 49 CFR Part 397 (Hazardous Materials Driving and Parking Rules). If military operators do not possess this document, shipper may provide a copy to operator.</p> <p>Item 9. *Commercial Vehicle Safety Alliance (CVSA) Decal. Check to see if equipment has a current CVSA decal and mark applicable box. Vehicles without CVSA, check documentation of the last vehicle periodic inspection.</p>	<p><b>SECTION 11 (Continued)</b></p> <p>Item 12.a. Spare Electrical Fuses. Check to ensure that at least one spare fuse for each type of installed fuse is carried on the vehicle as a spare or vehicle is equipped with an overload protection device (circuit breaker). (49 CFR 393.95)</p> <p>b. Horn Operative. Ensure that horn is securely mounted and of sufficient volume to serve purpose. (49 CFR 393.81)</p> <p>c. Steering System. The steering wheel shall be secure and must not have any spokes cracked through or missing. The steering column must be securely fastened. Universal joints shall not be worn, faulty or repaired by welding. The steering gear box shall not have loose or missing mounting bolts or cracks in the gear box mounting brackets. The pitman arm on the steering gear output shaft shall not be loose. Steering wheel shall turn freely through the limit of travel in both directions. All components of a power steering system must be in operating condition. No parts shall be loose or broken. Belts shall not be frayed, cracked or slipping. The power steering system shall not be leaking. (49 CFR 396 Appendix G)</p> <p>d. Windshield/Wipers. Inspect to ensure that windshield is free from breaks, cracks or defects that would make operation of the vehicle unsafe; that the view of the driver is not obscured and that the windshield wipers are operational and wiper blades are in serviceable condition. Defroster must be operative when conditions require. (49 CFR 393.60, 393.78 and 393.79)</p> <p>e. Mirrors. Every vehicle must be equipped with two rear vision mirrors located so as to reflect to the driver a view of the highway to the rear along both sides of the vehicle. Mirrors shall not be cracked or dirty. (49 CFR 393.80)</p> <p>f. Warning Equipment. Equipment must include three bidirectional emergency reflective triangles that conform to the requirements of FMVSS No. 125. FLAME PRODUCING DEVICES ARE PROHIBITED. (49 CFR 393.95)</p> <p>g. Fire Extinguisher. Military vehicles must be equipped with two serviceable fire extinguishers with an Underwriters Laboratories rating of 10 BC or more. (Commercial motor vehicles must be equipped with one serviceable 10 BC Fire Extinguisher). Fire extinguisher(s) must be located so that it is readily accessible for use and securely mounted on the vehicle. The fire extinguisher must be designed, constructed and maintained to permit visual determination of whether it is fully charged. (49 CFR 393.95)</p> <p>h. Electrical Wiring: Electrical wiring must be clean and properly secured. Insulation must not be frayed, cracked or otherwise in poor condition. There shall be no uninsulated wires, improper splices or connections. Wires and electrical fixtures inside the cargo area must be protected from the lading. (49 CFR 393.28, 393.32, 393.33)</p>
<p><b>SECTION 11 - MECHANICAL INSPECTION</b></p> <p><b>General Instructions.</b></p> <p>All items (12.a. through 12.t.) will be checked on all incoming empty equipment prior to loading. All UNSATISFACTORY conditions must be corrected prior to loading. Items with an asterisk (*) shall be checked on all incoming loaded equipment. Unsatisfactory conditions that would affect the safe off-loading of the equipment must be corrected prior to unloading.</p>	

**Figure 204-12. DD Form 626, Motor Vehicle Inspection  
(Transporting Hazardous Materials) (Cont'd)**

INSTRUCTIONS	
<p><b>SECTION 11 (Continued)</b></p> <p>i. Lights/Reflectors. (Head, tail, turn signal, brake, clearance, marker and identification lights, Emergency Flashers). Inspect to see that all lighting devices and reflectors required are operable, of proper color and properly mounted. Ensure that lights and reflectors are not obscured by dirt or grease or have broken lenses. High/Low beam switch must be operative. Emergency Flashers must be operative on both the front and rear of vehicle. (49 CFR 393)</p> <p>j. Fuel System. Inspect fuel tank and lines to ensure that they are in serviceable condition, free from leaks, or evidence of leakage and securely mounted. Ensure that fuel tank filler cap is not missing. Examine cap for defective gasket or plugged vent. Inspect filler necks to see that they are in completely serviceable condition and not leaking at joints. (49 CFR 393.83 and 396 Appendix G)</p> <p>k. Exhaust System. Exhaust system shall discharge to the atmosphere at a location to the rear of the cab or if the exhaust projects above the cab, at a location near the rear of the cab. Exhaust system shall not be leaking at a point forward of or directly below the driver compartment. No part of the exhaust system shall be located where it will burn, char or damage electrical wiring, fuel system or any other part of the vehicle. No part of the exhaust system shall be temporarily repaired with wrap or patches. (49 CFR 393.83 and 396 Appendix G)</p> <p>1. Brake System (to include hand brakes, parking brakes and Low Air Warning devices). Check to ensure that brakes are operational and properly adjusted. Check for audible air leaks around air brake components and air lines. Check for fluid leaks, cracked or damaged lines in hydraulic brake systems. Ensure that parking brake is operational and properly adjusted. Low Air Warning devices must be operative. (49 CFR 396 Appendix G)</p> <p>m. Suspension. Inspect for indications of misaligned, shifted or cracked springs, loosened shackles, missing bolts, spring hangers unsecured at frame and cracked or loose U-bolts. Inspect for any unsecured axle positioning parts, and sign of axle misalignment, broken torsion bar springs (if so equipped). (49 CFR 396 Appendix G)</p> <p>n. Coupling Devices (Inspect without uncoupling). Fifth Wheels: Inspect for unsecured mounting to frame or any missing or damaged parts. Inspect for any visible space between upper and lower fifth wheel plates. Ensure that the locking jaws are around the shank and not the head of the kingpin. Ensure that the release lever is seated properly and safety latch is engaged. Pintle Hook, Drawbar, Towbar Eye and Tongue and Safety Devices: Inspect for unsecured mounting, cracks, missing or ineffective fasteners (welded repairs to pintle hook is prohibited). Ensure safety devices (chains, hooks, cables) are in serviceable condition and properly attached. (49 CFT 396 Appendix G)</p> <p>o. Cargo Space. Inspect to ensure that cargo space is clean and free from exposed bolts, nuts, screws, nails or inwardly projecting parts that could damage the lading. Check floor to ensure it is tight and free from holes. Floor shall not be permeated with oil or other substances. (49 CFR 177.815(e)(1) and 398.94)</p> <p>p. Landing Gear. Inspect to ensure that landing gear and assembly are in serviceable condition, correctly assembled, adequately lubricated and properly mounted.</p>	<p><b>SECTION 11 (Continued)</b></p> <p>q. Tires, Wheels and Rims: Inspect to ensure that tires are properly inflated. Flat or leaking tires are unacceptable. Inspect tires for cuts, bruises, breaks and blisters. Tires with cuts that extend into the cord body are unacceptable. Thread depth shall not be less than: 4/32 inches for tires on a steering axle of a power unit, and 2/32 inches for all other tires. Mixing bias and radial on the steering axle is prohibited. Inspect wheels and rims for cracks, unseated locking rings, broken, loose, damaged or missing lug nuts or elongated stud holes. (49 CFR 396 Appendix G)</p> <p>r. Tailgate/Doors. Inspect to see that all hinges are tight in body. Check for broken latches and safety chains. Doors must close securely. (49 CFR 177.835(h))</p> <p>s. Tarpaulin. If shipment is made on open equipment, ensure that lading is properly covered with fire and water resistant tarpaulin. (49 CFR 177.835(h))</p> <p>t. Other Unsatisfactory Condition. Note any other condition which would prohibit the vehicle from being loaded with hazardous materials.</p> <p>Item 14. For AA&amp;E and other shipments requiring satellite surveillance, ensure that the Satellite Motor Surveillance System is operable. Shipper will instruct the driver to send a "test" emergency message to DTTS by having the driver activate the "emergency (panic) button". Shipper will contact DTTS at 1-800-826-0794 to verify that test message was received. Message must be received by DTTS for system to be considered operational.</p> <p><b>SECTION III - POST LOADING INSPECTION</b></p> <p><b>General Instructions.</b></p> <p>All items will be checked prior to the release of loaded equipment. Shipment will not be released until deficiencies are corrected. All items will be checked on incoming loaded equipment. Deficiencies will be reported in accordance with applicable service regulations.</p> <p>Item 18. Check to ensure shipment is loaded in accordance with 49 CFR Part 177.848 and the applicable Segregation or Compatibility Table of 49 CFR 177.848.</p> <p>Item 19. Check to ensure the load is secured from movement in accordance with applicable service outload drawings.</p> <p>Item 20. Check to ensure seal(s) have been applied to closed equipment; fire and water resistant tarpaulin applied on open equipment.</p> <p>Item 21. Check to ensure each transport vehicle has been properly placarded in accordance with 49 CFR Part 172 Subpart F.</p> <p>Item 22. Check to ensure operator has been provided shipping papers that comply with 49 CFR Part 172 Subpart C. For shipments transported by Government vehicle, shipping paper will be DD Form 836.</p> <p>Item 23. Ensure operator(s) sign DD Form 626, are given a copy and understand the hazards associated with the shipment.</p> <p>Item 24. Applies to Commercial Shipments Only. If shipment is made under DOT Exemption 868, ensure that shipping papers are properly annotated and copy of Exemption 868 is with shipping papers.</p>

**Figure 204-12. DD Form 626, Motor Vehicle Inspection  
(Transporting Hazardous Materials) (Cont'd)**



COMMERCIAL BILL OF LADING				DATE 2003-09-22	ORIGINAL B/L NO. > N692320007014
CARRIER Bed Rock Inc. dba Tri State Motor			SCAC TSMT	CARRIER ACCOUNT NO.	
DESTINATION (Name, address and ZIP code) U.S. ECOLOGY HWY 95, 18 MILES N OF LATHRUP WELLS BOB MARCHAND 800-239-3943 BEATTY, NV 89003 US USECOL			SPLC (Dest.) 867184000	ORIGIN (Name, address and ZIP code) NAVAL BASE VENTURA COUNTY BLDG. 801 SHIPPING SECT. PORT HUENEME, CA 93043 US N69232	
CONSIGNEE (Name, address and ZIP code of installation) U.S. ECOLOGY HWY 95, 18 MILES N OF LATHRUP WELLS BOB MARCHAND 800-239-3943 BEATTY, NV 89003 US USECOLIOOI			SHIPPER (Name, address and ZIP code) NAVAL BASE VENTURA COUNTY BLDG. 801 SHIPPING SECT. PORT HUENEME, CA 93043 US N69232		
APPROPRIATION CHARGEABLE S4PC			BILL CHARGES TO (Dept/agency, bureau/office mailing address and ZIP code) U.S. BANK - POWER TRACK 1010 SOUTH 7TH STREET MINNEAPOLIS, MN 55415 US		
VIA (Route shipment when advantageous to the Government)			PWRTRK		
MARKS AND ANNOTATIONS E089822289 DDP Dual Driver SNS Satellite Monitoring RECEIVING HRS M-F 7AM - 5 PM. Until Monday September 22 (you or your dispatcher) must			TP: 1 DD:2003-09-23 S089822285 call every 6 hours and report your location to 1-703-428-2316/3200/2304/2231 or 1-757-878-8141/8111. (103) FOR IN-TRANSIT EMERGENCIES INVOLVING DOD GENERAL HAZARDOUS MATERIAL SHIPMENTS (EXCLUDING EXPLOSIVES) SEE DESCRIPTION OF ARTICLES		
TOTAL PKGS. NO KIND HM		DESCRIPTION OF ARTICLES (Use carrier's classification or tariff description if possible; otherwise use clear nontechnical description)		WEIGHT * (Pounds only)	
		CLASSIFICATION ITEM NO 196160 Waste, hazardous, other than radioactive, see Note, item 196161;  IN CASE OF EMERGENCY CALL FOR EXPLOSIVES: 703-697-0218/0219 FOR OTHER HAZMAT: 800-851-8061  Mileage 362 TOT QTY: 23971LB CU: 1616 SEE CONTINUATION SHEET FOR DETAILS		28971.0	
6 CR				FOR USE OF BILLING CARRIER ONLY Services Rate Charges TOTAL CHARGES	
TARIFF/SPECIAL RATE AUTHORITY TSMT: 500248-00		PICKUP SERVICE FURNISHED VEHICLE FULLY LOADED		SHIPPER'S INITIALS PCB	
STOP SHIPMENT AT		FURNISH INFORMATION ON CAR/TRUCKLOAD/CONTAINER SHIPMENTS			
		INITIALS & NO.		SEAL NUMBERS	
		TSMT: 238353		APPLIED BY CA	
CARRIER'S PICKUP DATE 2003-09-22		SIGNATURE OF AGENT DRIVER		PER	
MODE B		ESTIMATE 4,468.22		NO CLS/TLs 1	
TYPE RATE		#SC DDP: SNS		REASON	
ISSUING OFFICER AND OFFICE (issuing officer name, office and complete address) NAVAL BASE VENTURA COUNTY JOHN V CRANDALL, TM/TO 80598233 NAVAL BASE VENTURA COUNTY BLDG. 801 SHIPPING SECT. PORT HUENEME, CA 93043 US N69232		GBLOC LDNP		BY (Name of the delivering carrier)	
CONTRACT/PURCHASE ORDER NO. AND FOB POINT		DATED		DELIVERED ON DATE	
				AT (Actual delivery point)	
				DELIVERED THIS CONSIGNMENT COMPLETE & IN APPARENT GOOD ORDER EXCEPT AS MAY BE INDICATED SHORTAGE DAMAGED	
				CARRIER OS&D REPORT ATTACHED	
				DELIVERY AT DESTINATION FURNISHED	
				ACCESSORIAL SERVICES CERTIFICATION ATTACHED	
				NAME OF BILLING CARRIER	
				SIGNATURE OF AGENT	
THIS IS TO CERTIFY THAT HERE-IN NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION. SUBJECT TO SECTION 7 OF THE CONDITIONS, IF THIS SHIPMENT IS TO BE DELIVERED TO THE CONSIGNEE WITHOUT RECOURSE ON THE CONSIGNOR, THE CONSIGNOR SHALL SIGN THE FOLLOWING STATEMENT: THE CARRIER SHALL NOT MAKE DELIVERY OF THIS SHIPMENT WITHOUT PAYMENT OF FREIGHT AND ALL OTHER LAWFUL CHARGES.					
RECEIVED, SUBJECT TO THE TENDERS AND RULES IN EFFECT ON THE DATE OF THE ISSUE OF THIS BILL OF LADING, THE PROPERTY DESCRIBED ABOVE IN APPARENT GOOD ORDER, EXCEPT AS NOTED (CONTENTS AND CONDITIONS OF PACKAGES UNKNOWN), MARKED, CONSIGNED, AND DESTINED AS INDICATED ABOVE WHICH SAID CARRIER (THE WORD CARRIER BEING UNDERSTOOD THROUGHOUT THIS CONTRACT AS MEANING ANY PERSON OR CORPORATION IN POSSESSION OF THE PROPERTY UNDER THE CONTRACT) AGREES TO CARRY TO ITS USUAL PLACE OF DELIVERY AT SAID DESTINATION, IF ON ITS ROUTE, OTHERWISE TO DELIVER TO ANOTHER CARRIER ON THE ROUTE TO SAID DESTINATION. IT IS MUTUALLY AGREED AS TO EACH CARRIER OF ALL OR ANY OF, SAID PROPERTY OVER ALL OR ANY PORTION OF THE SAID ROUTE TO DESTINATION AND AS TO EACH PARTY AT ANY TIME INTERESTED IN ALL OR ANY SAID PROPERTY, THAT EVERY SERVICE BE PERFORMED HERE UNDER SHALL BE SUBJECT TO ALL THE BILL OF LADING TERM AND CONDITIONS IN THE GOVERNING CLASSIFICATION ON THE DATE OF THE SHIPMENT. SHIPPER HEREBY CERTIFIES THAT HE IS FAMILIAR WITH ALL THE BILL OF LADING TERMS AND CONDITIONS IN THE GOVERNING CLASSIFICATION AND THE SAID TERMS AND CONDITIONS ARE HEREBY AGREED BY THE SHIPPER, AND ACCEPTED FOR HIMSELF AND HIS ASSIGNS. NOTE - WHERE THE RATE IS DEPENDENT ON VALUE, SHIPPERS ARE REQUESTED TO STATE SPECIFICALLY IN WRITING THE AGREED OR DECLARED VALUE OF THE PROPERTY. THE AGREED OR DECLARED VALUE OF THE PROPERTY IS HEREBY SPECIFICALLY STATED BY THE SHIPPER TO BE NOT EXCEEDING: \$ _____ PER _____ FREIGHT CHARGES PREPAID <input type="checkbox"/> COLLECT <input type="checkbox"/> FREIGHT PREPAID UNLESS COLLECT BOX IS CHECKED					

Figure 204-13. Sample of Completed CBL for a HAZMAT Shipment

COMMERCIAL BILL OF LADING CONTINUATION SHEET			ORIGINAL		B/L NO. > N692320007014	
(This form is to be used as a continuation sheet for SF 1105, U.S. Government Freight Waybill-Original, or SF 1205, U.S. Government Freight Waybill-Privately Owned Personal Property- Original.)			ISSUING OFFICE (Name and complete address)			
TRANSPORTATION COMPANY TENDERED TO Bed Rock Inc. dba Tri State Motor			FROM (Shipping Point)		WAYBILL DATE	WAYBILL NUMBER
PACKAGES		DESCRIPTION OF ARTICLES (Use carrier's classification or tariff description if possible; otherwise use a clear nontechnical description.)	WEIGHT * (Pounds only)	FOR USE OF BILLING CARRIER ONLY		
NO	KIND			SERVICES	RATE	CHARGES
		<p>SIGNED.....X DATE.....9-22-2003 EMERGENCY CONTACT:NAVAL BASE VENTURA COUNTY EMERGENCY PHONE...:8059823372</p> <p>MARKS AND ANNOTATIONS:</p> <p>CONTACT DEFENSE LOGISTICS AGENCY HOTLINE 1-800-851-8061. FOR EXPLOSIVE SHIPMENTS CONTACT THE ARMY OPERATIONS CENTER, COLLECT (703) 697-0218/0219. ASK FOR THE "WATCH OFFICER". FOR DSC SAFEHAVEN CALL (800) 524-0331. FOR RADIOACTIVE MATERIAL ONLY: CALL (800) 424-8802. (104) DUAL DRIVER PROTECTIVE SERVICE REQUESTED. SIGNATURE AND TALLY RECORD (DD FORM 1907) FURNISHED TO CARRIER. (111) SHIPPER TO LOAD AND CONSIGNEE TO UNLOAD. DOES NOT APPLY TO TOWAWAY SHIPMENTS. (314) EMERGENCY RESPONSE INFORMATION FOR THIS MOTOR SHIPMENT IS INDEXED BY UN NUMBER AND IS LOCATED IN THE DEPARTMENT OF TRANSPORTATION EMERGENCY RESPONSE GUIDEBOOK (DOT PS800.5). (337) SATELLITE MOTOR SURVEILLANCE SERVICE (SM) REQUESTED. IN EVENT OF SYSTEM FAILURE, DRIVER MUST IMMEDIATELY NOTIFY THE MOTOR CARRIERS DISPATCHER WHO WILL IMMEDIATELY NOTIFY DTTS AT 1-800-826-0794. THE DRIVER MUST SUBSEQUENTLY PROVIDE DTTS A TELEPHONIC LOCATION/STATUS REPORT EVERY FOUR (4) HOURS, WITH A FINAL TELEPHONIC REPORT UPON DELIVERY AT DESTINATION. (367) THIS SHIPMENT MUST NOT BE TRANSPORTED IN TRIP-LEASED EQUIPMENT. 405 - Fuel Related Rate Adjustment \$ 126.06</p> <p>THIS IS A DTTS SHIPMENT</p> <p>EQUIPMENT DESCRIPTION CONT:</p> <p>TRACTOR: 91149 TOTAL NET EXPLOSIVE WEIGHT (LB) -&gt; Total Weight 28,971.0 Total Cost 4,468.22</p> <p><i>Kenneth M. Taylor</i> MANIFEST# 65256 8P981 65257 8P976 6P971 8P982</p>	0.0			

Figure 204-13. Sample of Completed CBL for a HAZMAT Shipment (Cont'd)

**MULTIMODAL DANGEROUS GOODS FORM**

This form may be used as a dangerous goods declaration as it meets the requirements of SOLAS 74, chapter VII, regulation 54; MARPOL 79/78, Annex III, regulation 4.

1 Shipper/Consignor/Sender		2 Transport document number		
		3 Page 1 of      pages	4 Shipper's reference	
		5 Freight forwarder's reference		
6 Consignee		7 Carrier (to be completed by the carrier)		
		<b>SHIPPER'S DECLARATION</b> I hereby declare that the contents of this consignment are fully and accurately described below by the Proper Shipping Name, and are classified, packaged, marked and labeled/placarded and are in all respects in proper condition for transport according to the applicable international and national government regulations.		
8 This shipment is within the limitations prescribed for: (Delete non-applicable)		9 Additional handling information		
PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY			
10 Vessel/flight No. and date	11 Port/place of loading			
12 Port/place of discharge	13 Destination			
14 Shipping marks      Number and kind of packages; description of goods      Gross mass (kg)      Net mass (kg)      Cube (m <sup>3</sup> )				
15 Container identification No./vehicle registration. No.	16 Seal number(s)	17 Container/vehicle & type	18 Tare mass (kg)	19 Total gross mass (including tare) (kg)
<b>CONTAINER/VEHICLE PACKING CERTIFICATE</b>  I hereby declare that the goods described above have been packed/loaded into the container/vehicle identified above in accordance with the applicable provisions.+ <b>MUST BE COMPLETED AND SIGNED FOR ALL CONTAINER/VEHICLE LOADS BY PERSON RESPONSIBLE FOR PACKING/LOADING</b>		<b>21 RECEIVING ORGANIZATION RECEIPT</b>  Received the above number of packages/containers/trailers in apparent good order and condition, unless stated hereon: RECEIVING ORGANIZATION REMARKS:		
20 Name of company	Haulier's name		22 Name of company (OF SHIPPER PREPARING THIS NOTE)	
	Vehicle reg. no.			
Name/status of declarant	Signature and date		Name/status of declarant	
Place and date			Place and date	
Signature of declarant	DRIVER'S SIGNATURE		Signature of declarant	

**Figure 204-14. Multimodal Dangerous Goods Form**



CONTAINER PACKING CERTIFICATE OR VEHICLE PACKING DECLARATION			
Person responsible for packing the cargo transport unit (vehicle/container) should complete the checklist. Cross out "vehicle" or "container," as applicable. After completion, sign the certificate.			
<b>1 It is declared that the undersigned has visually inspected (Container/Vehicle/Trailer Number): _____ [cross out those items that do <u>NOT</u> apply] and it has been loaded/packed in accordance with the provisions of 5.4.2.1 (IMDGC) and CFR49 and that (indicate "N/A" for all items that do <u>NOT</u> apply):</b>			
	a. The cargo transport unit (container/vehicle) was clear, dry, and apparently fit to receive goods.		
	b. If the consignment includes goods of class 1, other than 1.4, the cargo transport unit (container/vehicle) is structurally serviceable in conformity with 7.4.6 (IMDGC).		
	c. Goods that should be segregated, have not been packed together onto or in the cargo transport unit (container/vehicle) (unless approved by the competent authority concerned IAW 7.2.2.3 (IMDGC)).		
	d. All packages have been externally inspected for damage, leakage or sifting, and only sound packages have been packed.		
	e. Drums have been stowed in an upright position, unless otherwise authorized by the competent authority.		
	f. All packages have been properly packed onto or in the cargo transport unit (container/vehicle) and secured.		
	g. When dangerous goods are transported in bulk packagings, the cargo has been evenly distributed.		
	h. The cargo transport unit (container/vehicle) and packagings therein are properly marked, labeled, and placarded.		
	i. When solid carbon dioxide (CO <sup>2</sup> – dry ice) is used for cooling purposes, the cargo transport unit (container/vehicle) is externally marked or labeled in a conspicuous place, such as the door and with the words: "DANGEROUS CO <sup>2</sup> – GAS (DRY) INSIDE. VENTILATE THOROUGHLY BEFORE ENTERING."		
	j. The dangerous goods transport document required in 5.4.1 (IMDGC) has been received for each dangerous goods consignment packed onto or in the cargo transport unit (container/vehicle).		
	k. If container is stowed with a vehicle and/or mechanical equipment with fuel in the tank, a warning label has been affixed to access doors legibly reading: " <b>WARNING—MAY CONTAIN EXPLOSIVE MIXTURES WITH AIR—KEEP IGNITION SOURCES AWAY WHEN OPENING</b> " IAW §176.905(a)(5), 49 CFR.		
<b>2. PERSON RESPONSIBLE FOR PACKING</b>			
<b>a. PRINTED NAME</b> ( <i>Last, First, Middle Initial</i> )	<b>b. RANK.GRADE</b>	<b>c. TITLE</b>	<b>d. ORGANIZATION</b>
<b>e. PLACE PACKED</b>	<b>f. SIGNATURE</b>		<b>g. DATE (YYYYMMDD)</b>

DD FORM 2781, SEP 1998 (599 TTG Overprint, JAN 2004) IAW Current IMDGC &amp; CFR 49 Parts 100-185

Figure 204-15. DD Form 2781, Container Packing Certificate or Vehicle Packing Declaration

**Table 204-1. Instructions for Completing Multimodal Dangerous Goods Form**

Block	Instruction
Block 1. Shipper	Enter the address and telephone number where the HAZMAT was certified.
Block 2. Transport Document No.	The vessel manifest number to which the Multimodal Dangerous Goods Form will be attached may be entered in this block. The shipper need not enter this number. The accepting operator may enter it at the time it is assigned. This block may also be left blank.
Block 3. Page...of...Pages	Enter the page number and total number of pages. Enter "Page 1 of 1 Pages" or leave blank if there are no extension pages.
Block 4. Shipper's Reference Number	Enter the 17-character TCN.
Block 5. Freight Forwarder's Reference	Leave Blank
Block 6. Consignee Optional Block	Enter the six-digit DODAAC and/or the in-the-clear geographical location of the ultimate consignee (if known). For shipments of infectious substances, enter also the name and telephone number of a responsible person for contact in an emergency.
Block 7. Carrier	To be completed by the carrier
Block 8. Shipment Within Passenger Aircraft and Cargo Aircraft Limitations	Since this form is used for surface vessel movements, leave blank.
Block 9. Additional Handling	Enter the 24 hour Emergency response telephone number. Also enter the Emergency Guide Number's the HAZMAT in this shipment.
Block 10. Vessel No. and Date	Input the Voyage Document number and the date of sail.
Block 11. Port/Place of Loading Proper Shipping Name	Enter the three-digit POE code and/or the in-the-clear geographical location of the port of embarkation.
Block 12. Port/Place of Discharge	Enter the three-digit POD code and/or the in-the-clear geographical location of the port of debarkation.
Block 13. Destination	
Block 14. (See Note)	<ol style="list-style-type: none"> <li>1. Enter the UN number preceded by the letters "UN".</li> <li>2. Enter the Proper Shipping Name</li> <li>3. Enter the Primary hazard class and division number. <ul style="list-style-type: none"> <li>o For Class 1 material include the compatibility group letter.</li> <li>o Any assigned Subsidiary hazard class or division will be entered following the Primary class in parenthesis.</li> <li>o The words "class" or "division" may be entered preceding the primary or subsidiary class numbers or divisions.</li> </ul> </li> <li>4. Enter the Packing Group when assigned. It may be preceded by "PG".</li> </ol> <p>SEQUENCE OF INFORMATION – The above information may be entered in the sequence shown, 1, 2, 3, 4 or in the sequence 2, 3, 1, 4.</p> <ol style="list-style-type: none"> <li>5. Enter additional information from the IMDG, Chapter 5.4, as required. (i.e., Marine Pollutant, Flashpoint etc.)</li> <li>6. Enter additional information from the 49 CFR, Section 171.12(b), as required. (i.e., Toxic Inhalation Hazard, RQ etc)</li> <li>7. Enter the number and kind of packaging.</li> <li>8. Enter the gross weight of the shipment for each item of HAZMAT bearing a different Proper Shipping Name, UN Number or Packing Group.</li> <li>9. Enter the total quantity of Dangerous Goods of each item of HAZMAT bearing a different Proper Shipping Name, UN Number or Packing Group. For Class 1 material this quantity will be the net explosive mass.</li> <li>10. Serial number for radioactive materials shipments may be annotated in this block.</li> </ol>

Block	Instruction	
Block 15. Container Id	Enter ID number of the container	
Block 16. Seal number(s)	Enter seal number installed on container	
Block 17. Container/vehicle size & type	Enter type and size of container	
Block 18. Tare mass (kg)	Enter tare weight of the container.	
Block 19. Total Gross Mass	Enter total gross weight of container	
Block 20. Container/Vehicle Packing Certificate	Leave Blank as the requirements for this will be met by completing DD Form 2781.	
Block 21. Receiving Organization Receipt	Leave Blank as this will be filled out by the receiving organization	
Block 22. Name of the company or shipper preparing this note (form)	Name/Title of Signatory	Enter the name and title of the official signing the form.
	Place and Date	Enter the place and date the material was certified (i.e., Hill AFB, 1 Jan 04)
	Signature	The official who certifies that the shipment complies with the requirements of this instruction must sign the form in longhand.

**NOTE:** The information in Block 14 listed in Items 1-7 will be placed below the “Shipping Marks” and Number and kind of packages; description of goods” section of Block 14. The information required in Item 8 will be placed below the “Gross mass (kg)” section of Block 14. The information required in Item 9 may be placed under the “Net mass (kg)” section of Block 14.

**Table 204-2. DOD Services Components/POC for DOT-E, CAA, Special Approvals, and COEs**

<b>Department of the Army</b>	
<b><u>Ammunition and Related Exemptions</u></b> Commander, US TACOM-ARDEC ATTN: AMSTA-AR-WEP-RP Ms. Nora Hipschen Rock Island, IL 61299-7300 DSN: 793-8205 Commercial: 309-782-8205 E-mail: <a href="mailto:HipschenN@ria.army.mil">HipschenN@ria.army.mil</a>	<b><u>Ammunition and Related Exemptions</u></b> Commander, US Army JMC ATTN: AMSJM-TT (Mr. David Tipp) Rock Island, IL 61299-6000 DSN: 793-5030 Commercial: 309 782-5030 E-mail: <a href="mailto:Tippd@OSC.army.mil">Tippd@OSC.army.mil</a>
<b><u>Missiles Related Exemptions</u></b> Commander, US Army AMCOM ATTN: AMSAM-MMC-MM-DT Ms. Janice Hopkins Building 5302, 2nd Floor Redstone Arsenal, AL 35898-5110 DSN: 645-8281 Commercial: 256 955-8281 E-mail: <a href="mailto:Janice.Hopkins@redstone.army.mil">Janice.Hopkins@redstone.army.mil</a>	<b><u>All Other Exemptions</u></b> Chief US Army Logistics Support Activity Packaging, Storage, and Containerization Center Attn: AMXLS-AT (Mr. Bill Craze/Ms. Sandy Pizzuti) 11 HAP Arnold Blvd. Tobyhanna, PA 18466-5097 DSN: 795-7070/7682 Commercial: 570 895-7070 E-mail: <a href="mailto:sandy.pizzuti@logsa.redstone.army.mil">sandy.pizzuti@logsa.redstone.army.mil</a> E-mail: <a href="mailto:William.craze@logsa.redstone.army.mil">William.craze@logsa.redstone.army.mil</a>
<b>Department of the Air Force</b>	
<b><u>All Exemptions/CAA/COEs</u></b> AFMC LSO/LOT Attn: Mark Ferguson or Tonita Davis 5215 Thurlow Street, Suite 5 Bldg 70, Area C Wright-Patterson AFB, OH 45433-5540 Commercial: 937 257-1984/4503 DSN: 787-1984/4503 E-mail: <a href="mailto:Mark.Ferguson@wpafb.af.mil">Mark.Ferguson@wpafb.af.mil</a> E-mail: <a href="mailto:Tonita.Davis@wpafb.af.mil">Tonita.Davis@wpafb.af.mil</a>	<b><u>Explosive Classification CAAs</u></b> HQ AFSC/SEW ATTN: Mr. Kevin Carr 9700 G Ave SE Kirtland AFB, NM 87117-5670 DSN: 246-2662 Commercial: 505 846-2662 E-mail: <a href="mailto:Kevin.Carr@kirtland.af.mil">Kevin.Carr@kirtland.af.mil</a>
<b>Department of the Navy</b>	
<b><u>CAA/COEs (Ordnance)</u></b> Director Naval Surface Warfare Center Indian Head Division Detachment Earle Attn: Code 7121 201 Highway 24 South Colts Neck, NJ 07722-5023 Commercial: 732 866-2821 DSN: 449-2821 E-mail: <a href="mailto:DressRA@phst.navy.mil">DressRA@phst.navy.mil</a>	<b><u>Exemptions</u></b> Commanding Officer Naval Ordnance Safety and Security Activity Attn: Code N714 Farragut Hall, Building D323 23 Strauss Avenue Indian Head, MD 20640-5555 Commercial: 301 744-6055/6056 DSN: 354-6055/6056 E-mail: <a href="mailto:belloj@navsea.navy.mil">belloj@navsea.navy.mil</a>

<p><b><u>CAA/COEs (Non-Ordnance)</u></b>          Naval Inventory Control Point          Code 0772.30 (Mr. Gerald Boyd)          P.O. Box 2020          5450 Carlisle Pike          Mechanicsburg, PA 17055-0788          Commercial: 717 605-2784          DSN: 430-2784          E-mail: <a href="mailto:gerald.boyd@navy.mil">gerald.boyd@navy.mil</a></p>	<p><b><u>Explosive Hazard Classification CAA</u></b>          Commanding Officer          Naval Ordnance Safety and Security Activity          Attn: Code N714          Farragut Hall, Building D323          23 Strauss Avenue          Indian Head, MD 20640-5555          Commercial: 301 744-6021          DSN: 354-6021          E-mail: <a href="mailto:walsemange@navsea.navy.mil">walsemange@navsea.navy.mil</a></p>
<p><b>U.S. Marine Corps</b></p>	
<p><b><u>Explosive Hazard Classification CAA</u></b>          Commanding Officer          Indian Head Division          Naval Ordnance Safety and Security Activity          Attn: N7143          Farragut Hall, Bldg. D323          23 Strauss Ave          Indian Head, MD 20640-5555          DSN: 354-6068          Commercial: 301 744-6068          E-mail: <a href="mailto:walsemange@navsea.navy.mil">walsemange@navsea.navy.mil</a></p>	<p><b><u>All Exemptions/CAA/COEs (Non-Ordance)</u></b>          Commandant of the Marine Corps          2 Navy Annex          Attn: LPC-4 (Mr. George Barchuk)          Washington, DC 20380-1775          DSN: 225-8926          E-mail: <a href="mailto:barchukg@hqmc.usmc.mil">barchukg@hqmc.usmc.mil</a></p>
<p><b>DLA</b></p>	
<p><b><u>COEs</u></b>          Defense Logistics Agency          Attn: J-3731 (Ms. Vicki Edgar)          8725 John J. Kingman Road, Suite 4330          Fort Belvoir, VA 22060-6221          DSN: 427-6582          Commercial: 703 767-6582          E-mail: <a href="mailto:vicki.edgar@dla.mil">vicki.edgar@dla.mil</a></p>	<p><b><u>Exemptions/CAA</u></b>          Defense Logistics Agency          Attn: J3733          Ms. Betty Yanowsky Slanta          8725 John J. Kingman Road, Suite 4234          Fort Belvoir, VA 22060-6221          DSN: 427-3638          Commercial: 703 767-3638          E-mail: <a href="mailto:trans@dla.mil">trans@dla.mil</a> or <a href="mailto:betty.yanowsky@dla.mil">betty.yanowsky@dla.mil</a></p>



**Table 204-3. CAA POC**

DEPARTMENT OF THE ARMY	DEPARTMENT OF THE NAVY
<p><b><u>Ammunition and Related Items</u></b></p> <p>Commander, US Army TACOM-ARDEC Attn: AMSTA-AR-WEP-RP Ms. Kim Wheat Rock Island, IL 61299-7300 DSN: 793-8203 Commercial: 309 782-8203 E-mail: <a href="mailto:Kimberly.wheat@us.army.mil">Kimberly.wheat@us.army.mil</a></p>	<p><b><u>All Ammunition and Related Items for Navy and Marine Corp</u></b></p> <p>Director Naval Surface Warfare Center Indian Head Division Detachment Earle Attn: Code 715 201 Highway 34 South Colts Neck, NJ 07722-5023 Commercial: 732 866-2821 DSN: 449-2821</p>
<p><b><u>Missiles and Related Exemptions</u></b></p> <p>Commander, US Army AMCOM ATTN: AMSAM-MMC-MM-DT Ms. Janice Hopkins Building 5302, 2nd Floor Redstone Arsenal, AL 35898-5110 DSN: 645-8281 Commercial: 256 955-8281 E-mail: <a href="mailto:Janice.Hopkins@redstone.army.mil">Janice.Hopkins@redstone.army.mil</a></p>	<p><b>DEPARTMENT OF THE AIR FORCE</b></p> <p><b><u>All</u></b></p> <p>AFMC LSO/LOT Attn: Mark Ferguson or Tonita Davis 5215 Thurlow Street, Suite 5 Bldg 70, Area C Wright-Patterson AFB, OH 45433-5540 Commercial: 937 257-1984/4503 DSN: 787-1984/4503 E-mail: <a href="mailto:Mark.Ferguson@wpafb.af.mil">Mark.Ferguson@wpafb.af.mil</a> E-mail: <a href="mailto:Tonita.Davis@wpafb.af.mil">Tonita.Davis@wpafb.af.mil</a></p>
<p><b><u>All Other Items</u></b></p> <p>Chief, USAMC, LOGSA PSCC Attn: AMXLS-AT 11 Hap Arnold Blvd Tobyhanna, PA 18466-5097 DSN: 795-7070/7862 Commercial: 570 895-7070/7682</p>	<p><b>DEFENSE LOGISTICS AGENCY</b></p> <p><b><u>All</u></b></p> <p>Defense Logistics Agency Attn: J-3731 (Ms. Vickie Edgar) 8725 John J. Kingman Road, Suite 4330 Fort Belvoir, VA 22060-6221 DSN: 427-6582 Commercial: 703 767-6582 E-mail: <a href="mailto:vickie.edgar@dla.mil">vickie.edgar@dla.mil</a></p>

**Table 204-4. COE POC Ammunition and Related Items**

<b>Army</b>	
<p><b><u>AY-XX-21 through AY-XX-40</u></b></p> <p>Commander TACOM ARDEC ATTN: AMSTA-AR-WEP Mr Jim Zoll/Mr. Mike Ivankoe Bldg 455 Picatinny Arsenal, NJ 07806-5000 DSN: 880 2133/2142 Commercial: 973 724-2133/2142</p>	<p><b><u>AY-XX-41 through AY-XX-80</u></b></p> <p>Commander, US Army TACOM-ARDEC Attn: AMSTA-AR-WEP-RP Ms. Kim Wheat Rock Island, IL 61299-7300 DSN: 793-8203 Commercial: 309 782-8203 E-mail: Kimberly.wheat@us.army.mil</p>
<p><b><u>AY-XX-81 through AY-XX-200</u></b></p> <p>Commander, US Army AMCOM ATTN: AMSAM-MMC-MM-DT Ms. Janice Hopkins Building 5302, 2nd Floor Redstone Arsenal, AL 35898-5110 DSN: 645-8281 Commercial: 256 955-8281 E-mail: <a href="mailto:Janice.Hopkins@redstone.army.mil">Janice.Hopkins@redstone.army.mil</a></p>	
<b>Navy/Marine Corps</b>	
<p><b><u>NA-XX through 300</u></b></p> <p>Director Naval Surface Warfare Center Indian Head Division Detachment Earle Attn: Code 715 201 Highway 34 South Colts Neck, NJ 07722-5023 Commercial: 732 866-2821 DSN: 449-2821</p>	<p><b><u>NA-XX-700 through NASO NA-XX-849</u></b></p> <p>Naval Inventory Control Point-Philadelphia Code 0771.27 700 Robbins Avenue Philadelphia, PA 19111-5098 DSN: 442-5395 Commercial: 215 697-5395</p>
<p><b><u>NA-XX-300 through SPAWARSCOM NZ-XX-699</u></b></p> <p>Space &amp; Naval Warfare Systems Command SPAWAR 04L-1C Bldg OT1-Room 213 (1120-C) 4301 Pacific Highway San Diego, CA 92110-3215 No DSN, Commercial: 619 557-0176</p>	<p><b><u>NA-XX-850 through NAVICP-Mechanicsburg NA-XX-999</u></b></p> <p>Naval Inventory Control Point-Mechanicsburg P.O. Box 2020, Code 0772.30 5450 Carlisle Drive Mechanicsburg, PA 17055-0788 DSN: 430-2784 Commercial: 717 605-2784</p>
<p><b><u>NA-XX 400 through NAVFACENGCOM NA-XX-499</u></b></p> <p>Naval Facilities Engineering Command Alexandria, VA 22332-2300 DSN: 221-9133 Commercial: 703 325-9133</p>	<p><b><u>NA-XX-500 through NAVSEASCOM NA-XX-699</u></b></p> <p>Director Naval Surface Warfare Center, Indian Head Division Detachment Earle Attn: Code 715 201 Highway 34 South Colts Neck, NJ 07722-5023 Commercial: 732 866-2821 DSN: 449-2821</p>

<b><u>COEs (NON-ORDNANCE) (NAVY)</u></b> Naval Inventory Control Point ATTN: Mr. Gerald L. Boyd Box 2020, Code 0772.30 5450 Carlisle Pike Mechanicsburg, PA 17055-0788 DSN: 430-2784 Commercial: 717 605-2784 E-mail: gerald_l_boyd@icpmech.navy.mil	
<b>Air Force</b>	
<b><u>AF 1-19</u></b> ASC/SY 1790 10 <sup>th</sup> Street Room 102.01 Wright-Patterson AFB, OH 45433-7630 DSN: 785-7811 Commercial: 937 255-7811	<b><u>AF 226-250</u></b> OC-ALC/LGIT 7701 Arnold Street, Suite 112 Tinker AFB, OK 73145-8912 DSN: 339-3544 Commercial: 405 739-3544
<b><u>AF 20-29</u></b> DET 12/RPN Space and Missile Systems Center 3548 Aberdeen Ave., S.E. Kirkland AFB, NM 87117-5778 DSN: 246-4893 Commercial: 505 846-4893	<b><u>AF 251-325</u></b> OO-ALC/LGMPD 7573 Utility Drive Hill AFB, UT 84056-5306 DSN: 777-4748 Commercial: 801 777-4748
<b><u>AF 51-60</u></b> AAC/YBCM 314 W. Choctawhatchee Ave., Suite 104 Eglin AFB, FL 32542-5717 DSN: 872-4609 ext. 5567 Commercial: 850 882-4609 ext. 5567	<b><u>AF 326-400</u></b> WR-ALC/LGMTD 375 Perry Street Robins AFB, GA 31098-1863 DSN: 468-3259 Commercial: 478 926-3259

Section:

**SATELLITE ACCUMULATION POINT (SAP) WEEKLY INSPECTION**

For The Month Of:

REGULATION (s)	CHECKS MADE	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5
AR 200-1 Ch. 4-3 (i)	Are SAP areas inspected and documented at a minimum of once a week?					
40 CFR 262.34 (c) (1)	Does the SAP meet the total accumulation requirements not to exceed 55 gallons of hazardous waste or 1 quart of acutely hazardous waste and, if so, are the storage containers dated?					
40 CFR 262.34 (c) (1)	Are hazardous waste containers at or near any point of generation under the control of the operator of the process who generates the waste?					
40 CFR 265.172	Are the containers used to store the hazardous waste made of or lined with materials that are compatible with the hazardous waste?					
40 CFR 112.8 (c) (1)	Are hazardous waste containers, which store liquids free from leaks, rust, or dents?					
40 CFR 279.22 (b)						
40 CFR 265.171						
40 CFR 265.173 (a)	Are the hazardous waste containers kept closed except when adding or removing waste?					
40 CFR 262.34 (c)(ii)	Are hazardous waste containers properly labeled "Hazardous Waste" and with the name of the waste stored?					
40 CFR 262.34 (c)(2)	Are the hazardous waste containers legibly marked with the date the container was filled, and properly transported to the HAZMART/8300 Block by the ECO/ECST within 3 days from the day it was filled?					
JRTC & FP Reg 200-1 BMP	Are POL soaked rags properly managed?					
JRTC & FP Reg 200-1	Are all hazardous waste containers which store liquids provided with a means of secondary containment?					
40 CFR 112.8(c)(2)						
40 CFR 112.8(c)(11)						
29 CFR 1910.1200 (f) (5)	Are the outside of containers, to include their supports/foundations, inspected for signs of deterioration (dents, rust, etc.) or discharges?					
AR 200-1, Ch 4 (4-2)(b)						
40 CFR 112.8(c)(6)						
40 CFR 112.7(g)(2)	Do all diked storage areas have valves and are the valves sealed or closed to prevent any unauthorized discharge?					
40 CFR 112.8(b)(1)						
40 CFR 112.8(c)(3),(6),(10)	Are diked storage areas inspected for accumulation of oil before emptying to ensure no oil will be discharged and are ALL discharges, to include storm water, documented?					
40 CFR 112.8(c)(10)	Are all visible leaks to diked storage areas promptly repaired/corrected?					
SAP was inspected on the following dates for the month:						

Friday, September 07, 2012

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**For each week the Inspector's Initials are placed in block for checks**

**Signed By:**

## GENERAL

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
1	AR 200-1 Ch 1-27(14) (15) and Ch 1-32 (f) 40 CFR 265.16	Have the Unit/Activity primary ECO (E-5 or above for military units) and alternate ECO been appointed on orders and do they have their current ECO Certificate of Training on hand?				
2	AR 200-1 Ch. 4-2 (b) 40 CFR 112.3 (a) (e) 29 CFR 1910.1200(e) (1) AR 200-1, Ch 4-3 (a) (3)	Are the required publications on hand? (AR 200-1, JRTC & FP Reg 200-1, Hazardous Communication Plan; Unit/Activity Spill Plan SOP, SPCCP)				
3	AR 200-1 Ch 1-27(21) AR 200-1 Ch 4-2 (b) 40 CFR 112.7(e) JRTC & FP Reg 200-1	Are all applicable environmental compliance inspections to include SAP, Used POL storage areas, and ECC compliance inspections being conducted, documented, and signed by the Unit/Activity ECO and are the records maintained for 3 years?				
4	AR 200-1 Ch 4-3 (b) 40 CFR 370.25	Is a copy of the Hazardous Material Inventory on file, updated as needed, and validated for the quarter by the CMB?				
5	AR 200-1 Ch 1-32(e), 1-33 (d) 40 CFR 265.16(4)(e)	Has Unit/Activity training in HAZARDOUS MATERIAL/WASTE HANDLING been conducted and documented for the last 3 years?				
6	40 CFR 112.21 (b) AR 200-1 Ch 4-2(b)	Does the Unit ECO develop, supervise and evaluate the staging of an annual mock spill to test the Unit's understanding of the Spill Plan and the Unit's ability to appropriately respond to a spill?				
7	AR 200-1 Ch 3-1 (b), 4-2(b) AR 200-1 Ch 4-3 (e) 40 CFR 265.173(a),(b)	Is the entire Unit/Activity area inspected monthly (storage areas, connexes, supply rooms, admin areas, and others) to ensure that all hazardous material/waste, universal/solid waste, and POL products are being managed properly IAW JRTC & FP Reg 200-1? (i.e., stored, labeled, marked, bar-coded)?				
8	AR 200-1 Ch 2-3f(1)	Is the area free of materials, pollutants, residue or trash on the ground that could wash away or contaminate storm water runoff?				
9	AR 200-1 Ch 2-3f(1)	Is the area free of any evidence of discharges of pollutants from the site via storm water drains?				
10	JRTC & FP Reg 200-1	Is the organizational ECO reporting all alterations, renovations, modifications, or construction to any portion of a structure or building to include ceiling tiles, floor tiles, and walls, to ENRMD?				
11	40 CFR 82.34(a), 82.42 (a), 82.42(b)(1), 82.42 (b)(2), and 82.42(b) (4)	Are personnel servicing, repairing, or disposing of automotive, HVAC, or other types of refrigeration systems trained and certified and a copy of the certification maintained at the Organization?				
12	DOD Memorandum, Objective 1, Subobjective 1	Are the shop and unit level personnel trained in pollution minimization techniques and how to prevent pollution?				
13	40 CFR 70.1	Does the organization know the number and location of all stationary air emission sources within their area (parts washers, boilers, fuel dispensing, fuel storage tanks, stationary generators, etc.)?				
14	LAC, 33:III.5105	Are stationary air emission sources unchanged (i.e. no sources recently added, modified or removed)?				

## MAINTENANCE BAYS

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
15	40 CFR 110.3(a),(b) AR 200-1 Ch 4-2(b) 29 CFR 1910.22(a) (2)	Are the maintenance bay floors free of POL products to prevent a potential hazard or a release into the environment?				
16	AR 200-1 Ch 4-3(i)	Are containers for new and used dry sweep in place and labeled "NEW" or "USED"?				

17	AR 200-1 Ch 4-3(i)	Are maintenance personnel aware of the proper procedure for disposing of contaminated dry sweep?				
18	29 CFR 1910.22(a) (2) AR 200-1 Ch 4-2(b)	Are spills being cleaned so that no residual product remains?				
19	AR 200-1 Ch 4-3(i)	Are maintenance bay floors being wet mopped only and not being washed down by spraying water on them?				

**PART WASHERS**

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
20	LAC, 33:III.2125. A. 2 AR 200-1 Ch. 4-3(i)	Are solvent machine lids tight fitting, and kept closed except when parts are actually being cleaned?				
21	40 CFR 63-462 (8) AR 200-1 Ch 4-3(i)	Is the work tray clean and free of items such as rags, excessive dirt or grease build-up?				
22	40 CFR 63-462 (3) AR 200-1 Ch 4-3(i)	Are personnel allowing the excess solvent to drain off parts before removing parts from solvent machine?				
23	40 CFR 262.34(a) (3) AR 200-1 Ch. 4-3 (i)	Are the containers used to store the waste parts-washer filters labeled "Hazardous Waste - Inland Filters" and stored adjacent to washer?				
24	LAC, 33:III.2125. C	Are parts washers located away from strong ventilation and large fans so that excessive evaporation of the solvent does not occur?				

**IN-USE HAZARDOUS MATERIAL STORAGE AREA**

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
25	AR 200-1, Ch 4-3(i)	Does the Unit/Activity Spill Plan address the storage area?				
26	29 CFR 1910.132 (d) (1) (i)	Is appropriate personal protective equipment (PPE) readily available for personnel as per requirements of the MSDS?				
27	AR 200-1 Ch 4 (4-2) (b) 40 CFR 265-171 40 CFR 112.8(c)(6)	Are conditions of containers, to include their supports/foundations, inspected for signs of deterioration (dents, rust, etc.) or discharges?				
28	AR 200-1 Ch 3-3 (4) (a) AR 200-1, Ch 4.2(b) 40 CFR 112.8(c)(2) 40 CFR 112.8(c)(11)	Do all In-Use POL containers have secondary containment and do containers that are stored outside have a secondary cover to prevent the intrusion of rainwater?				
29	40 CFR 112.7(g)(2) 40 CFR 112.8(b)(1) 40 CFR 112.8(c)(3)	Do all diked storage areas have valves and are the valves sealed or closed to prevent any unauthorized discharges?				
30	40 CFR 112.7(g)(3)	Are starter controls on oil pumps locked in the "off" position when in non-operating or non-standby status?				
31	40 CFR 112.8(b)(1),(2) 40 CFR 112.8(c)(3),(6),(10)	Are diked storage areas inspected for accumulation of oil before emptying to ensure no oil will be discharged and are ALL discharges, to include storm water, documented?				
32	40 CFR 112.8(c)(10)	Are all visible leaks to diked storage area promptly repaired/corrected?				
33	AR 200-1, Ch 4 (4-2) (b)	Are spill kits or absorbent material located at or near the In-Use hazardous material storage areas?				
34	40 CFR 370.25 (a) AR 200-1 Ch 4-3 (b)	Are hard copies of the MSDS on-site and updated as necessary?				

35	AR 200-1, Ch. 4 (4-2) (b)	Are the drum/container lids in place to prevent leaks or spills?				
36	JRTC & FP Reg 200-1, BMP	Is paint (excluding aerosol cans) signed out as free issue from the HAZMART returned to the HAZMART within 21 days of issue?				
37	AR 200-1, Ch 4-3(i)	Are drip pans placed under the spout of drums used for dispensing POL products?				

**TIRE STORAGE AREAS**

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
38	LAC, 33:VII.10509.A	Are waste tires prohibited and prevented from being disposed in a dumpster?				
39	BMP	Are measures in place to ensure that waste tires are stored for less than 120 days and no more than 50 tires are accumulated?				
40	LAC, 33:VII.10519.H.2	Is vector and vermin control provided for waste tire collection areas?				
41	LAC, 33:VII.10519.H.3	Does the waste tire storage area provide a means to keep water out and prevent or control standing water?				
42	LAC, 33:VII.10519.K	Are waste tires taken only to DRMO (military vehicles) or GSA (government vehicles)?				

**NEW HAZARDOUS MATERIAL STORAGE AREAS**

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
43	AR 200-1, Ch 4 (4-2) (b) 29 CFR 1910.1200(g) (1)	Is the storage area secured to protect against tampering or trespassers?				
44	40 CFR 370.25(a) AR 200-1 Ch 4-3(b)	Is a copy of the Hazardous Material Inventory and hard copies of the MSDS on-site and updated as necessary?				
45	AR 200-1, Ch 3-3(d) (1)	Does the Unit/Activity Spill Plan address the storage area?				
46	29 CFR 1910.132 (D)(1)(I)	Is appropriate personal protective equipment (PPE) readily available at the site which meets the requirements of the MSDSs?				
47	29 CFR 1910.1200(f) (5) AR 200-1, Ch 4 (4-2)(b)	Are drums/containers marked with the name of the substance and appropriate warning labels?				
48	40 CFR 112.8(c)(2) 40 CFR 112.8(c)(11)	Do all bulk oil storage containers (greater than or equal to 55 gallons) have secondary containment?				
49	29 CFR 1910.1200 (f) (5) AR 200-1, Ch 4 (4-2) (b) 40 CFR 112.8(c)(6)	Are the outside of containers, to include their supports/foundations, inspected for signs of deterioration (dents, rust, etc.) or discharges?				
50	40 CFR 112.7(g)(2) 40 CFR 112.8(b) (1) 40 CFR 112.8(c)(3)	Do all diked storage areas have valves and are the valves sealed or closed to prevent any unauthorized discharges?				
51	40 CFR 112.8(b)(1),(2) 40 CFR 112.8(c) (3),(6),(10)	Are diked storage areas inspected for accumulation of oil before emptying to ensure no oil will be discharged and are ALL discharges, to include storm water, documented?				
52	40 CFR 112.8(c)(10)	Are all visible leaks to diked storage areas promptly repaired/corrected?				

53	AR 200-1, Ch 4 (4-2) (b)	Are lids or shipping seals in place on all drums/containers?				
54	AR 200-1, Ch 4 (4-2) (b)	Are all drums/containers located away from basins, drains or waterways?				
55	29 CFR 1910.106 (d)(5)(i)	Are flammable or combustible liquids stored in ways that do not limit the use of exits, stairways, or areas normally used for safe egress of people?				
56	AR 200-1, Ch 4-2 (b) 40 CFR 110.3 (a), (b)	Are hazardous materials, which are stored outside, covered to prevent intrusion of rainwater?				
57	AR 200-1, Ch 4 (4-2) (b)	Are incompatible materials properly segregated?				
58	AR 200-1, Ch 4 (4-2) (b)	Is a spill kit or absorbent material located where hazardous materials are stored?				
59	AR 200-1, Ch 4 (4-2) (b) 29 CFR 1910.1200 (f), (5)	Are containers inside the storage cabinet labeled, stored orderly (i.e., new.) and all caps, lids, and bungs in place?				
60	JRTC & FP Reg 200-1, BMP	Has the organization obtained written permission from the HAZMART to purchase hazardous materials from outside sources?				
61	JRTC & FP Reg 200-1, BMP	Are materials with expired shelf-life dates properly managed?				
62	JRTC & FP Reg 200-1, BMP	Are all hazardous materials purchased from outside sources bar coded by the HAZMART if required?				
63	40 CFR 82.42.c	Does the organization have refrigerant (such as freon) on-hand and is the refrigerant properly stored?				
64	42 USC 7671d(a)	Are all refrigerants obtained through the HAZMART?				
65	40 CFR 63.462(a)	Does the organization discourage and prevent the use or storage any halogenated solvents such as: methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform or any combination of these halogenated HAP solvents?				

## UNIVERSAL WASTE COLLECTION POINTS

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
66	40 CFR 273.14	Are universal waste batteries, lamps, pesticides, and mercury stored in an appropriate container marked "Universal Waste (with the type of waste)"?				
67	40 CFR 273.35	Is the container dated when the first waste is placed inside the container?				
68	40 CFR 273.37	Are all releases of universal waste and residue immediately contained and cleaned up?				
69	40 CFR 273.35	Is universal waste being accumulated for no more than 1 year from the date received?				
70	29 CFR 1910.1200(g)(1)(8)	Are hard copies of the MSDS on-site and updated as necessary?				
71	40 CFR 273.33(a)(1) and 273.33(a)(2); 40 CFR 273.33 (b-d)	Is the Universal waste container kept closed at all times?				



## COMPRESSED GAS STORAGE AREAS

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
72	AR 700-68, 5-8 (C) (2)	Does the storage area provide cylinder protection against physical and environmental damage to include tampering from unauthorized personnel?				
73	AR 700-68, 5-4 (A)	Can the contents of the cylinder be identified using labels or markings?				
74	AR 700-68, 5-4 (B)	Are caps, plugs, or valve outlet caps left in place at all times except when the cylinder is connected to the dispensing equipment?				
75	AR 200-1, Ch 4-3(i)	Is appropriate personal protective equipment for the type of gas immediately available?				
76	AR 700-68, 5-7(C)	Are compressed gas cylinders segregated by transportation labels into three primary groups: flammable, nonflammable, and poison?				
77	AR 700-68, 5-8(A)	Are compressed gases, which are stored in the same room or bay with other commodities, separated by a specified minimum distance of 20 feet from incompatible compressed gases, flammable liquids, or incompatible materials?				
78	AR 700-68, 5-8(C)(5)	Are compressed gases, which are stored in separate buildings without other commodities, located at least 50 feet from adjacent buildings and equipment?				
79	AR 700-68, 5-8(D)(2)(5)	Are cylinders which are stored outside placed on a raised concrete slab or other dunnage and covered with a fixed non-combustible canopy to prevent cylinders from contact with the ground, inclement weather or direct sun light?				
80	AR 700-68, 5-9 (A) AR 200-1, Ch 4 (4-2) (b)	Are full and empty cylinders stored separately and "EMPTY" cylinders marked "EMPTY"?				
81	AR 700-68, 5-10(2) (6) AR 200-1 Ch. 4 (4-2) (b)	Are all compressed gas cylinders stored in a valve end upright position, if possible, and secured to prevent being pushed over?				
82	AR 700-68, 5-10(b)	Are no smoking signs posted around flammable storage areas on each side and at the entrance to special storage areas?				

## VEHICLE LINE

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
83	AR 200-1 Ch 3-2, 3-3(2) AR 200-1 Ch 4-2(b)	Are drip pans properly placed under vehicles that leak POL products?				
84	AR 200-1 Ch 4-3(i)	Are drip pans containing POLs emptied into the proper used oil containers, as needed, so as to prevent any possible contamination to the environment?				
85	AR 200-1 Ch 4-2(b)	Are spills cleaned up to the extent that no residual product remains?				
86	AR 200-1 Ch 4-2(b)	Is absorbent material available for the clean up of spills or leaks?				
87	AR 200-1 Ch 4-3(i)	Are operators/line personnel aware of the proper procedures for disposal of contaminated dry sweep?				
88	JRTC & FP Reg 200-1, BMP	Are drip pans containing water emptied into the washrack, as needed, to prevent any possible contamination to the environment?				
89	40 CFR 110.3 (b) AR 200-1, Ch 4-2(b)	Is the line free of organizational maintenance in which any type of POL products could be released? (i.e., draining oil, pulling packs, changing final drives, etc.)				

## USED POL STORAGE AREAS

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
90	AR 200-1, Ch 4-2 (b) 40 CFR 279.22 (b)	Is the ECO conducting, documenting, signing and maintaining weekly inspections of the used POL storage area for leaking, dented, rusted containers, and general housekeeping?				
91	40 CFR 279.22 (c)	Are drums or containers that are utilized to store used oil properly labeled as "Used Oil"?				
92	40 CFR 279.22 (c) AR 200-1, Ch 4-2 (b)	Are drums or containers that are utilized to store contaminated fuel properly labeled as "Contaminated (JP-8, Diesel, MOGAS) Fuel"?				
93	AR 200-1, Ch 4-2 (b) (1)	Do all used POL containers, which are stored outside, have a secondary cover to prevent the intrusion of rainwater?				
94	AR 200-1, Ch 4-2 (b) 40 CFR 112.8(c)(2) 40 CFR 112.8(c)(11)	Do all used POL containers (greater than or equal to 55 gallons) have secondary containment?				
95	29 CFR 1910.1200(f) (5) AR 200-1, Ch 4 (4-2) (b) 40 CFR 112.8 (c)(6)	Are the outside of containers, to include their supports/foundations, inspected for signs of deterioration (dents, rust, etc.) or discharge?				
96	40 CFR 112.7(g)(2) 40 CFR 112.8(b)(1) 40 CFR 112.8(c)(3)	Do all diked storage areas have valves and are the valves sealed or closed to prevent any unauthorized discharge?				
97	40 CFR 112.7(g)(3)	Are starter controls on oil pumps locked in the "off" position when in non-operating or non-standby status?				
98	40 CFR 112.8(b)(1), (2) 40 CFR 112.8(c)(3),(6),(10)	Are diked storage areas inspected for accumulation of oil before emptying to ensure no oil will be discharged and are ALL discharges to include storm water documented?				
99	40 CFR 112.8(c)(10)	Are all visible leaks to diked storage areas promptly repaired/corrected?				
100	AR 200-1, Ch 4-2 (b)	Are all caps, lids, bungs, or funnels closed properly except when adding or removing liquids from the containers?				
101	AR 200-1, Ch 3-3 (d)(1)	Does the Unit/Activity Spill Plan address the Used POL Storage area?				
102	AR 200-1, Ch 4-2(b)	Is the storage area secured to protect against tampering or trespassers, if possible?				

## SOLID WASTE

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
103	40 CFR 243.100(b) and 243.200-1; LAC, 33:VII. 703.A and B.1	Is solid waste (including food waste) placed only in contractor-provided dumpsters (bulky items placed beside dumpsters)?				
104	LAC, 33:VII.315.Q	Does the unit prohibit and prevent any open burning of solid waste?				
105	40 CFR 243.100(b) and 243.200-1	Are all solid wastes (including bulky waste) stored so as not to cause a fire, health, or safety hazard?				
106	40 CFR 243.100(b) and 243.200-1; LAC, 33:VII. 703.A and B.1	Are solid waste containers of an adequate size and number to contain all non-hazardous waste generated between collections?				
107	41 CFR 243.100(b) and 243.200-1	Are bulky wastes stored to avoid accumulation of additional waste and water?				

108	AR 200-1, para 5-10b(8) DOID 4715.4, para E7(e) and F2(c)(3) AR 420-49, para 3-3 40 CFR 246.200-1	Are recyclables collected and segregated and placed in appropriate recycling containers?				
109	40 CFR 243.100(b) and 243.200-1 LAC, 33:VII. 703.A and B.1	Are waste containers (including food waste containers) kept closed?				
110	40 CFR 243.100(b) and 243.200-1 LAC, 33:VII. 703.A and B.1	Do waste containers (including food waste containers) keep out water?				
111	JRTC & FP Reg 200-1, BMP	Are solid waste receptacles inspected daily to verify that they are free of hazardous waste and restricted items (i.e., MRE heaters, batteries, aerosol cans, tires, wood metal, paint)?				

## SATELLITE ACCUMULATION POINT (SAP)

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
112	AR 200-1 Ch. 4-3(i)	Are SAP areas inspected and documented at a minimum of once a week?				
113	40 CFR 262.34 (c) (1)	Does the SAP meet the total accumulation requirements not to exceed 55 gallons of hazardous waste or 1 quart of acutely hazardous waste and, if so, are the storage containers dated?				
114	40 CFR 262.34 (c) (1)	Are hazardous waste containers at or near any point of generation under the control of the operator of the process who generates the waste?				
115	40 CFR 265.172 40 CFR 112.8 (c) (1)	Are containers used to store the hazardous waste made of or lined with materials that are compatible with the hazardous waste?				
116	40 CFR 279.22(b) 40 CFR 265.171	Are hazardous waste containers, which store liquids free from leaks, rust, or dents?				
117	40 CFR 265.173 (a)	Are the hazardous waste containers kept closed except when adding or removing waste?				
118	40 CFR 262.34 (c) (ii)	Are hazardous waste containers properly labeled "Hazardous Waste" and with the name of the waste stored?				
119	40 CFR 262.34 (c) (2)	Are the hazardous waste containers legibly marked with the date the container was filled, and properly transported to the HAZMART/8300 Block by the ECO/ECRST within 3 days from the day it was filled?				
120	JRTC & FP Reg 200-1, BMP	Are POL soaked rags properly managed?				
121	JRTC & FP Reg 200-1 40 CFR 112.8(c)(2) 40 CFR 112.7(c)(11)	Are all hazardous waste containers, which store liquids, provided with a means of secondary containment?				
122	29 CFR 1910.1200(f)(5) AR 200-1, Ch 4 (4-2) (b) 40 CFR 112.8(c)(6)	Are the outside of containers, to include their supports/foundations, inspected for signs of deterioration (dent's rust, etc.) or discharges?				
123	40 CFR 112.7(g)(2) 40 CFR 112.8(b)(1) 40 CFR 112.8(c)(3)	Do all diked storage areas have valves and are the valves sealed or closed to prevent any unauthorized discharge?				
124	40 CFR 112.8(b)(1),(2) 40 CFR 112.8(c)(3),(6),(10)	Are diked storage areas inspected for accumulation of oil before emptying to ensure no oil will be discharged and are ALL discharges to include storm water documented?				
125	40 CFR 112.8(c)(10)	Are all visible leaks to diked storage areas promptly repaired/corrected?				

## WASHRACK

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
126	AR 200-1, Ch 4-3(i)	Are only pre-approved biodegradable detergents being used?				
127	AR 200-1, Ch 4-3(i)	Is the hardstand of the washrack area free of spilled POL?				
128	AR 200-1, Ch 4-3(i)	Is the trough free of foreign debris, sediment and trash that could impede the intended operation of the washrack?				
129	40 CFR 110.3(a)(b) AR 200-1 Ch 4-2(b)	Is the oil-water separator functional?				
130	AR 200-1 Ch 4-3(i)	Is the oil-water separator free of foreign debris and trash?				
131	JRTC & FR Reg 200-1, BMP	Are empty containers (except paint) triple rinsed prior to turn-in to the HAZMART?				

## PAINTING OPERATIONS

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
132	LAC, 33:III.2123.C through F	Does the painting facility maintain paint usage records at the facility for at least 3 years?				
133	JRTC & FP Reg 200-1, para 6-8	Is all equipment painting performed in an authorized paint booth?				
134	JRTC & FP Reg 200-1, para 6-8	Are the paint booth doors always closed when painting takes place?				

## STORAGE TANKS

	REGULATION	CHECK	YES	NO	N/A	COMMENTS
135	29 CFR 1910.1200 (f)(5) AR 200-1, Ch 4(4-2) (b) 40 CFR 112.8(c)(6) DA PAM 200-1 Ch 4-5a(b)(4)	Are storage tanks and containers, to include their supports/foundations, inspected for signs of deterioration (dents, rust, etc.) or discharges and are maintenance requirements identified?				
136	40 CFR 112.8(d)(4) 40 CFR 112.8(d)(1)	Are storage tank valves, piping and accessories (flange joints, expansion joints, etc.) inspected for signs of leaks, corrosion, or deterioration?				
137	DA PAM 200-1 Ch 4-5(h)(1)(3)d 40 CFR 112.8(c)(2)	Is a secondary containment system provided for each storage tank?				
138	JRTC & FP Reg 200-1 Ch 7-7a	Are all storage tanks secondary containment systems free of tank product, liquid or debris and are the drains functioning?				
139	JRTC & FP Reg 200-1 Ch 7-7b	Is the area around the storage tanks free of evidence of spillage or leakage that may cause a potential hazard or a release into the environment?				
140	40 CFR 112.7(g)(2) 40 CFR 112.8(b)(1),(c)(3)	Are storage tanks secondary containment drain valves kept sealed or closed to prevent any unauthorized discharge?				
141	40 CFR 112.7(g)(3)	Are starter controls on oil pumps locked in the "off" position when in non-operating or non-standby status?				
142	40 CFR 112.8(b)(1), (2) 40 CFR 112.8(c)(3),(6),(10)	Are diked storage areas inspected for accumulation of oil before emptying to ensure no oil will be discharged and are ALL discharges to include storm water documented?				
143	40 CFR 112.8(c)(10)	Are all visible leaks to diked storage areas promptly repaired/corrected?				
144	DA PAM 200-1 Ch 4-5b(1)	Are drip pans placed under the nozzles of hoses used to dispense POL from storage tanks?				
145	DA PAM 200-1 Ch 4-5b(2) 40 CFR 112.8(c)(3)	Does the organization maintain a storage tank secondary containment drain discharge log that indicates who, when and what was discharged?				
146	AR 700-68, 5-10(b)	Are the appropriate signs posted on or around storage tanks (i.e., no smoking)?				
147	JRTC & FP Reg 200-1	Are reports and records of all releases (suspected or confirmed releases) kept on hand?				
148	AR 200-1, Ch 3-2d(1)	Does the Unit/Activity Spill Plan address the materials contained in all storage tanks?				

## **CONSOLIDATED WASTE FACILITY 8300 BLOCK STANDARD OPERATING PROCEDURE**

### **Lithium Battery Procedure**

#### **Required Equipment**

Safety goggles or face shield  
Status Indicator Tester  
State of Charge Tester  
Modified voltage meter  
Voltage meter  
Label remover  
Flat tip screw driver (wide tip)  
Battery test sheet

#### **Warning**

**Safety goggles or face shield must be worn when handling batteries. No smoking, eating, or drinking inside of the haz-stor. If a battery begins to vent at any time during testing or discharging, STOP with what you are doing, leave the building, and close the door. Then notify Fort Polk's ENRMD of the situation by calling 531-6008. If contract number is the same as on the CECOM alert message Do Not discharge the battery. (See attached sheet)**

#### **Processing**

##### **1. Turn in**

When used lithium batteries are delivered to the 8300 Block, the types and quantities of batteries, person's name, and the name of the unit that is turning them in are logged on a Restricted Item Receipt (see attachment). The pink copy of the Restricted Item Receipt is given to the person who turned in the batteries.

**Wear safety goggles or a face shield while handling batteries.** All batteries are segregated by type (BA or BB-XXXX) and then stored inside the designated Haz-Stor until they can be inspected and tested. The Haz-Stor ventilation system is to be on as long as there are batteries inside the facility.

##### **2. Visual Inspection**

Check the CDD seal to determine if it has been removed, torn, or discolored from moisture. Also check to see if the CDD button has been depressed for discharged. Inspect for cracks, dents, writings, and contract number. If batteries appear to be in good condition, proceed to number 3. If batteries are damaged or have depressed CDDs, then proceed to number 4. If batteries have contract number from CECOM alert message, proceed to number 5.

##### **3. Testing**

If the battery is a BA-5590/U, then connect the battery on the Status Indicator Tester. If a green light appears, then connect the battery to the State of Charge Tester. If a red light appears, then skip to number 4 for discharging instructions. If the State of Charge Tester indicates that the BA-5590/U has more than 70% of its life remaining, then the battery may be set aside for re-issue. If the State of Charge Tester indicates that the BA-5590/U has less than 70% of its life remaining, then it is to be discharged.

## **CONSOLIDATED WASTE FACILITY 8300 BLOCK STANDARD OPERATING PROCEDURE**

### **Lithium Battery Procedure**

If a battery does not have a CDD or is accompanied by a “Do Not Discharge” safety notice, they are considered universal waste. Proceed to number 5.

For all other batteries, proceed to number 4.

#### **4. Discharging**

Log on the Battery Test Sheet the type of battery, manufacturer, serial number, and unit responsible for turning in the battery. Remove the CDD seal and depress the CDD button. Write on the battery with a permanent marker the date the battery was discharged. Place batteries on shelf with the battery test sheet for 5 days. On the 5<sup>th</sup> day, test the battery with a modified voltage meter or voltage meter. Refer to the attached voltage guidance sheet for the required voltage for each type of battery. If the modified voltage meter / voltage meter indicates that the battery is below the required voltage it is considered a non-universal (Solid) waste, then proceed to number 6 for non-universal (solid) waste disposal instruction.

If the modified voltage meter / voltage meter indicates that the battery contains more than the required voltage for non-universal waste, then it is to be placed back on the shelf for another 5 days. At the end of the additional 5 days, if the battery tests below its voltage disposition for non-universal waste, then proceed to number 6. If the battery still test above the non-universal waste voltage disposition, then it must be disposed as universal waste (see number 5).

#### **5. Universal Waste Battery Disposal**

Batteries that are to be disposed of as universal waste are placed in Haz-Stor #1 on a shelf marked “UNIVERSAL WASTE BATTERY” to await packaging for DRMO turn in. Universal waste batteries may be packaged in 5- or 10-gallon boxes with no more than 100 cells in a box. Refer to the attached Battery Cell Chart for the number of cells per battery.

#### **6. Non-Universal (Solid) Waste Battery Disposal**

Batteries that are non-universal after discharging can be disposed of in a designated dumpster at the 8300 Block.





# State of Louisiana

## Department of Environmental Quality

M.J. "MIKE" FOSTER, JR.  
GOVERNOR

July 20, 2000

J. DALE GIVENS  
SECRETARY

CERTIFIED MAIL Z 441 765 019  
RETURN RECEIPT REQUESTED

Ms. Linda L. Baetz  
Program Manager  
Hazardous and Medical Waste  
Department of the Army  
U.S. Army Center for Health Promotion and Preventive Medicine  
5158 Blackhawk Road  
Aberdeen Proving Ground, Maryland 21010-5433

Dear Ms. Baetz:

Tuesday, July 27, 2010

The Department is in receipt of your letter dated March 14, 2000, describing the flameless ration heaters (FRH) and the Army's handling and disposal methods of the unused FRH's. In the letter, the Army is requesting DEQ's input on the handling and disposal methods that satisfy the state regulatory requirements. After reviewing your information, Ms. Christine Hull, Ph.D., Installation Hazardous Waste and Hazardous Materials Manager, Fort Polk, Louisiana was contacted and she supplied the Department with the report, "Disposal Methods for Flameless Ration Heaters and Meals Ready-to-Eat for the Food Service Program", Final Report June 1, 1999. The report, detailing information about the FRH and the Army's methods of handling and disposal of the unused FRH's, was also reviewed by the Department.

After review of the report, the unused FRH's are considered hazardous waste because they are reactive, "reacting violently with water" as defined in LAC 33:V.4903.D.2. Therefore, unused FRH's are not allowed in solid or industrial landfills as discussed in the Army's above mentioned report.

The Army may want to consider the following options:

1. The continued reuse of the unused FRH by sending them back to the manufacturer;
2. Upgraded educational programs to soldiers on the hazards related to disposing of unused FRH;
3. Mandatory use or reacting of all FRH's in the soldiers' Meal Ready-to-Eat (MRE) at point of opening;
4. Separation of all FRH from solid waste stream for reacting prior to disposal.



5  
eScriber



If you need any additional assistance, please contact Mr. Steven R. Aguillard of the Enforcement Section at (225) 765-2965. Thank you for your cooperation in this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Bruce Hammatt", with a long horizontal flourish extending to the right.

R. Bruce Hammatt  
Administrator  
Enforcement Division

RBH/SKH

C: Christine Hull, Ph.D.  
Installation Hazardous Waste and Hazardous Materials Manager  
JRTC and Fort Polk  
Fort Polk, LA 71459

Tuesday, July 27, 2010

Section

Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF01528	801000PAINT	VARIOUS		D007
W90WDF01174	8040001817111	DOW CORNING CORP	ADHESIV 281	D001
W90WDF01307	5970012726041	HUMISEAL DIV	AEROSOL ACRYLIC COMFORMAL 1B73	D035
W90WDF00798	8040001178510	DOW CORNING	RTV 3145 ADHESIVE SEALANT	NON-RCRA
W90WDF00512	6810002929625	CSD INC.	1,1,1-TRICHLOROETHANE	U226
W90WDF00686	6550012468234	RICHARD ALLAN MEDICAL INDUSTRIES	10 NEUTRAL BUFFERED FORMALIN V/V	D001
W90WDF00528	6550013174927	BIOCHEMICAL SCIENCES	10% NEUTRAL BUFFERED FORMALIN	NON-RCRA
W90WDF00665	6550CHLORIDE	DADE MICROSCAN	10%FERRIC CHLORIDE	NON RCRA
W90WDF00903	6750013671043	EASTMAN KODAK COMPANY	101 3259 LIQUID DEVELOPER SYSTEM CLEANER	D002
W90WDF01059	8040013811968	DOW CORNING	1205 PRIME COAT	D001
W90WDF01442	681000FORMALIN	FISHER SCIENTIFIC CHEMICALS	14% BUFFERED FORMALIN ACETATE	NON-RCRA
W90WDF01357	681000N028781	CALGON	1726,CB-265(CLEANER)	NON-RCRA
W90WDF01521	9150001429361	SANDSTORM PRODUCTS COMPANY	27A DRY FILM LUBRICANT	D001 D035
W90WDF00328	681000PROPANOL	JT BAKER	2-PROPANOL	D001
W90WDF00390	6550011656732	STEPHENS SCIENTIFIC	3121 ONE-STEP II WRIGHT GIEMSA STAIN	D001
W90WDF01009	6850011695924	PICKER INTL	3-7-90 STARTER SOLUTION	D002
W90WDF00013	675000DEVELOPER	IMATION ENTERPRISES	3M BRAND DEVELOPER	NON-RCRA
W90WDF00910	8040002660824	3M	3M EC-776 FUEL RESISTANT COATING	D001
W90WDF01378	803000COMPOUND	3M	3M SUPER FAST URETHANE (BLACK)	NON-RCRA
W90WDF00674	655000F031230	DADE MICROSCAN	40% POTASSIUM HYDROXIDE	NON RCRA
W90WDF00322	9150001199291	DOW CORNING	55 O-RING LUBRICANT	NON-RCRA
W90WDF01284	6505012740951	FUJISA USA, INC.	55-DIAZEPAM INJECTORS	NON-RCRA
W90WDF01372	6640009351485	BIOCHEMICAL SCIENCES INC	57006 HISTOMOUNT T	D001
W90WDF01158	6850012316746	XEROX	5R139 DEVELOPER, INDIRECT ELECTROSTATIC PROCESS	NON-RCRA
W90WDF01351	803000F013626	MARTIN-SENOUR AUTOMOTIVE SALES	6378 TEC PREMIUM LIGHT BODY FILLER	D001
W90WDF01368	6840011040780	PRENTISS DRUG AND CHEM CO. INC.	655-501 PRENTOX PYRONYL OIL CONCENTRATE	NON-RCRA
W90WDF00456	803000N068448	DOW CORNING	700 SILICONE SEALANT	NON-RCRA
W90WDF00563	8030002513980	LOCTITE	76764 ANTI-SEIZE COMPOUND LUBRICANT	NON-RCRA
W90WDF01392	804000ADHESIVE	LORD CHEMICAL	8802-5B (MAVIDON)	NON-RCRA
W90WDF01314	804000SEALANT	PERMATEX, INC.	98D HIGH TRACK GASKET SEALANT	D001
W90WDF00494	8030005798453	ADVANCED CHEMISTRY & TECHNOLOGY	AC-236 SEALING COMPOUND	D001
W90WDF01333	8040011812355	LORD CORP	ACCELERATOR 4 (RD2132-17)	D040
W90WDF00876	915000LUBRICANT	ITW FLUID PRODUCTS	ACCULUBE LB 2000	NON-RCRA
W90WDF01278	684000INSECTICIDE	8300 BLOCK 03-02	ACCUMULATION WASTE INSECTICIDE	NON-RCRA
W90WDF01280	915000POL	8300 BLOCK 03-02	ACCUMULATION WASTE POL	D039 D040
W90WDF01210	804000ADHESIVE	FRANKLIN INTERNATIONAL	ACE SOLVENT FREE COVE BASE ADHESIVE	NON-RCRA
W90WDF00337	6810002751215	CELANESE CHEMICAL	ACETIC ACID	D001 D002
W90WDF00679	6810002211415	MALLINCKRODT J.T. BAKER	ACETIC ACID GLACIAL	D001
W90WDF00705	6505001002470	MALLINCKRODT SPECIALTY CHEM	ACETIC ACID GLACIAL	D001 D002
W90WDF00336	6810007534780	CORCO CHEMICAL	ACETONE	D001 U002

Section

Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00889	6810002232739	CSD INC.	ACETONE	D001 U002
W90WDF01285	6830002646715	UNION CARBIDE	ACETYLENE	D001
W90WDF00542	681000N038329	HACH CO.	ACID PRESERVATIVE SOLUTION	D002
W90WDF00190	6505001352881	PADDOCK LABORATORIES	ACTIDOSE AQUA	NON-RCRA
W90WDF00192	6505013018870	PADDOCK LABORATORIES	ACTIDOSE-AQUA	NON-RCRA
W90WDF00728	6550011159182	DADE BEHRING MARBURG GMBH	ACTIN REAGENT	NON RCRA
W90WDF00197	6505001352881	PADDOCK LABORATORIES	ACTIVATED CHARCOAL	NON-RCRA
W90WDF01082	804000N031855	ROBERTS CONSOLIDATED INDUSTRIES	ADHESIVE - 3055 MULTI PURPOSE FLOOR	D001
W90WDF00976	804000F041842	OATEY	ADHESIVE - 30818 ALL PURPOSE CEMENT	D001 D035
W90WDF01087	804000N052305	WW HENRY	ADHESIVE - 436 CERAMIC TILE ADHESIVE	NON-RCRA
W90WDF01191	8040001594884	STEVEN INDUSTRIES	ADHESIVE - 6549 CVV	D001
W90WDF01376	803000ADHESIVE	LORD MANUFACTURING	ADHESIVE - 8802 5B PART B	NON-RCRA
W90WDF01086	8040002703210	BALKAMP	ADHESIVE - BOOT CEMENT	D040
W90WDF01053	8040010589504	EMERSON CUMING	ADHESIVE - CATALYST 9	NON-RCRA
W90WDF01211	804000ADHESIVE	FRANKLIN INTERNATIONAL	ADHESIVE - CEILING TILE	D001
W90WDF01318	804000N024452	RALPH WILSON PLASTIC CO.	ADHESIVE - CONTACT 500	D001
W90WDF01073	8040-00-ADHESIVE	DAP	ADHESIVE - D 600 CARPET	NON-RCRA
W90WDF00696	804000ADHESIVE	DAP INC	ADHESIVE - DAP WELDWOOD ORIGINAL CONTACT CEMENT	D001 D035
W90WDF01337	8040013266423	LOCTITE	ADHESIVE - DEPEND	D001 D019
W90WDF01194	804000N070966	LOCTITE CORP	ADHESIVE - DEPEND ODC FREE 330	D019 D025
W90WDF00086	8040005979723	3M CO.	ADHESIVE - EC 776 FUEL RESISTANT COATING	D001
W90WDF01054	8040011611753	EMERSON CUMING	ADHESIVE - ECCO BOND 51 BLACK	NON-RCRA
W90WDF01079	804000N008377	3M	ADHESIVE - FASTBOND 10 CONTACT CEMENT	D001 D018
W90WDF00986	8040013432993	CYTEC	ADHESIVE - FM 87 1 ADHESIVE FILM	D035
W90WDF01104	804000F052742	DECORATOR PRODUCTS	ADHESIVE - GH50 VINYL TO VINYL WALLCOVERING	NON-RCRA
W90WDF01068	804000B070034	GIBSON-HOMANS	ADHESIVE - HEAVY DUTY CLEAR WALLCOVERING 8780	NON-RCRA
W90WDF00708	804000N02 0872	THE W.W. HENRY CO.	ADHESIVE - HENRY 237	NON-RCRA
W90WDF00150	804000F034573	WW HENRY CO.	ADHESIVE - HENRY 356 FLOOR COVERING	NON-RCRA
W90WDF00019	8040012614187	W W HENRY CO	ADHESIVE - HENRY 436 SPREAD FLOOR TILE ADHESIVE	NON-RCRA
W90WDF00468	804000F004682	W W HENRY	ADHESIVE - HENRY 440	NON-RCRA
W90WDF00707	804000ADHESIVE	THE W.W. HENRY CO.	ADHESIVE - HENRY 663	NON-RCRA
W90WDF01008	804000F000350	PERMATEX	ADHESIVE - HIGH TACK SUPER ADHESIVE	D001 D035
W90WDF01017	8040002643848	CLIFTON ADHESIVE	ADHESIVE - LA 495 TENT PATCH	D001 D035
W90WDF00056	8040013288043	GLIDDEN CO.	ADHESIVE - LIQUID NAILS	D001
W90WDF01353	803000ADHESIVE	MACCO	ADHESIVE - LIQUID NAILS LN601	D001 D018
W90WDF01311	804000N002122	MACCO ADHESIVES	ADHESIVE - LIQUID NAILS LN-603	D001
W90WDF01328	804000ADHESIVE	ICI PAINTS	ADHESIVE - LIQUID NAILS LN901	D001
W90WDF00753	804000ADHESIVE	MACCO ADHESIVES	ADHESIVE - LIQUID NAILS PV-20	NON-RCRA
W90WDF00771	804000N011342	H.B.FULLER	ADHESIVE - MAX BOND MULTIPURPOSE	D001
W90WDF00737	804000N011342	HB FULLER COMPANY	ADHESIVE - MAX BOND MULTIPURPOSE	D001

Section

Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF011165	8040001343712	CHEMTRONICS	ADHESIVE - MICRO BOND	NON-RCRA
W90WDF01232	804000N033763	TEXAS REFINERY CORP	ADHESIVE - MIGHTY PLATE PLASTIC CEMENT	D001
W90WDF01152	804000N023606	PALMER PRODUCTS	ADHESIVE - MIRRO MASTIC	NON-RCRA
W90WDF01078	804000ADHESIVE	NATARE CORPORATION	ADHESIVE - NATATEC MEMBRANE	D001 D035
W90WDF00362	8040002904301	TACC INTERNATIONAL	ADHESIVE - NEOPRENE	D001 D035
W90WDF01344	8040001429913	TACC INTERNATIONAL CORP.	ADHESIVE - NEOPRINE SOLVENTBORNE	D001
W90WDF01137	8040002918625	ELMER'S	ADHESIVE - NO WRINKLE RUBBER CEMENT	D001
W90WDF00610	8040001178738	BAKER SEALANTS AND COATING CO.	ADHESIVE - PAPER LABEL	D001
W90WDF00596	804000F019929	PARABOND	ADHESIVE - PIPE CEMENT P-18	D001 D035
W90WDF01083	803000SEALANT	CHEMREX	ADHESIVE - PL ADHESIVE SEALANT	D001
W90WDF01135	8040011261422	3M	ADHESIVE - PLASTIC ADHESIVE 1099	D001
W90WDF00597	803000CEMENT	TAMKO ROOFING	ADHESIVE - PLASTIC ROOF CEMENT	D001
W90WDF01336	8040014509187	STEVEN INDUSTRIES	ADHESIVE - POLYURETHANE PROTECTIVE TAPE ADHESIVE	D001
W90WDF00411	804000F045068	LD BRINKMAN	ADHESIVE - PRO 007 FLOORING	D018
W90WDF00598	804000N066574	OATEY CO	ADHESIVE - PVC CEMENT	D001 D035
W90WDF01081	804000ADHESIVE	RUBATEX CORPORATION	ADHESIVE - R 1933 2 DUCT LINER	D001
W90WDF00296	804000ADHESIVE	HB FULLER	ADHESIVE - R 3894 SYNTHETIC RESIN	NON-RCRA
W90WDF00658	804000HMC0018	ARMOR RESEARCH CO	ADHESIVE - RMG 600 RED	D001
W90WDF01321	804000ADHESIVE	VANITICO	ADHESIVE - RP 1257 3 HARDNER	NON-RCRA
W90WDF01230	8030008913113	CIBA GEIGY	ADHESIVE - RP 1257 3 RESIN	NON-RCRA
W90WDF00460	8030012292659	CIBA SPECIALTIES	ADHESIVE - RP 3265 HARDNER	NON-RCRA
W90WDF00459	803000RESIN	CIBA SPECIALTY CHEMICALS	ADHESIVE - RP 3265 RESIN	NON-RCRA
W90WDF00723	681000SOLVENT	CHEMAX CORP.	ADHESIVE - RP SUPER FILTER COAT AIR FILTER ADHESIVE	NON-RCRA
W90WDF00638	8040010780737	ARMSTRONG	ADHESIVE - S 235 MULTIPURPOSE ADHESIVE	NON-RCRA
W90WDF00018	8040001940312	ARMSTRONG WORLD INDUSTRIES	ADHESIVE - S 725 WALL BASE ADHESIVE	NON-RCRA
W90WDF00163	804000F003925	ARMSTRONG WORLD INDUSTRIES	ADHESIVE - S 750 FLOOR ADHESIVE	NON-RCRA
W90WDF00991	804000N000142	3M COMPANY	ADHESIVE - SCOTCH BRAND TAPE PRIMER 81	D001 D003
W90WDF01315	8040002738717	MINNISOTA MINING AND MFG CO	ADHESIVE - SCOTCH GRIP 1357CONTACT ADHESIVE	D001 D035
W90WDF00139	8040002660856	3M CO.	ADHESIVE - SCOTCH GRIP 847	D001
W90WDF01218	8040003907959	3M	ADHESIVE - SCOTCH GRIP 847	D001
W90WDF01029	8040001236954	3M	ADHESIVE - SCOTCH WELD 1751 KIT	NON-RCRA
W90WDF00224	8040001450530	3M	ADHESIVE - SCOTCH WELD 2216 PART A	NON-RCRA
W90WDF00225	8040001450530	3M	ADHESIVE - SCOTCH WELD 2216 PART B	NON-RCRA
W90WDF00914	8040014414904	3M	ADHESIVE - SCOTCH WELD 3549 B/A PART A	NON-RCRA
W90WDF01397	8040011922491	MINISOTA MINING AND MFG CO.	ADHESIVE - SCOTCH WELD BRAND PRIMER 3917	D035
W90WDF01117	8040001805941	3M	ADHESIVE - SCOTCH WELD TM 1838 PART A & B	NON-RCRA
W90WDF00913	8040012945223	3M	ADHESIVE - SCOTCHWELD 3549B DP-640	NON-RCRA
W90WDF01463	8040011975430	WASTE PAINT	ADHESIVE - STABOND N 122	NON-RCRA
W90WDF00882	804000N042268	OHIO SEALANTS	ADHESIVE - SUBFLOOR CONSTRUCTION ADHESIVE SF 400	D001
W90WDF01196	8040001817761	3M	ADHESIVE - SUPER 74 FOAM FAST ADHESIVE AEROSOL	D001 D003

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF01040	8040001092481	3M	ADHESIVE - SUPER WEATHERSTRIP ADHESIVE(YELLOW)	D001 D035
W90WDF00349	8040002660850	TACC INTERNATIONAL	ADHESIVE - TENT PATCHING	D001
W90WDF00021	8040002643848	TACC INTERNATIONAL	ADHESIVE - TENT PATCHING	D001
W90WDF01190	804000N000090	IPC	ADHESIVE - WELD ON 3 ADHESIVE	D040
W90WDF00626	804000ADHESIVE	DAP INC	ADHESIVE - WELDWOOD NONFLAMMABLE ADHESIVE	NON-RCRA
W90WDF01177	804001112190	ROBERTS CONSOLIDATED INDUSTRIES	ADHESIVE - WELDWOOD PLASTIC RESIN GLUE	NON-RCRA
W90WDF00565	803000F048132	GARDNER	ADHESIVE - WET DRY ROOF CEMENT	D001
W90WDF00564	804000ADHESIVE	GARDNER	ADHESIVE - WET/DRY ROOF CEMENT	D001
W90WDF00700	8040002629060	CLIFTON ADHESIVE INC.	ADHESIVE (CLIFTON)	D001 D035
W90WDF01058	8040010682423	MINNESOTA MINING	ADHESIVE- 2141 RUBBER AND GASKET	D001
W90WDF00263	8040011022098	BF GOODRICH	ADHESIVE A-1177 B-1 PART A	NON-RCRA
W90WDF00417	8040011022098	BF GOODRICH	ADHESIVE A-1177 PART B	NON-RCRA
W90WDF00797	8040002708137	H.B. FULLER	ADHESIVE EPOXY PART A	NON-RCRA
W90WDF00401	8040001487183	EMERSON AND CUMING	ADHESIVE EPOXY, CATALYST 15, BLACK	NON-RCRA
W90WDF00020	803000F038948	SHERWIN WILLIAMS	ADHESIVE -FLOOR MULTIPURPOSE C 98	NON-RCRA
W90WDF01066	8040002738703	CLIFTON ADHESIVES	ADHESIVE MMM-A-260C, TYPE II, CLASS I	D001
W90WDF00264	8040000976524	R H CARLSON CO	ADHESIVE NORCAST A 4000 PART B	NON-RCRA
W90WDF00820	8040011022098	BF GOODRICH	ADHESIVE PLASTIC EPOXY PART A	NON RCRA
W90WDF01074	8040011022098	BF GOODRICH	ADHESIVE PLASTIC EPOXY PART A AND B	NON-RCRA
W90WDF00821	8040011022098	BF GOODRICH	ADHESIVE PLASTIC EPOXY PART B	NON RCRA
W90WDF00092	8040012047187	DEXTER AEROSPACE	ADHESIVE PRIMER	D035
W90WDF00874	804000N044812	OATEY	ADHESIVE -RAIN R SHINE PVC CEMENT 30893	D001
W90WDF00458	801000N010342	PARKS CORP.	ADHESIVE REMOVER, PRO STRIPPER	D001
W90WDF00824	8040001658614	TACC INTERNATIONAL	ADHESIVE RUBBER	D001
W90WDF00819	8040001449774	DOW CORNING	ADHESIVE SEALANT	NON-RCRA
W90WDF00446	804000HMC0002	GIBSON-HOMANS CO.	ADHESIVE, COLD PROCESS	D001
W90WDF00796	8040002708137	H.B. FULLER CO	ADHESIVE, EPOXY PART B	NON-RCRA
W90WDF00366	8040000624173	H.B. FULLER	ADHESIVE, FE-7004-A RESIWELD	D001
W90WDF00414	8040000976524	RH CARLSON CO.	ADHESIVE, NORCAST A-4000 PART A	D001
W90WDF01092	804000F023934	PARA-CHEM SOUTHERN	ADHESIVE, PARABOND M-411 FLOOR COVERING	NON-RCRA
W90WDF01108	80400006644318	CLIFTON ADHESIVE	ADHESIVE, RUBBER BASE	D001 D035
W90WDF01080	8040-00-ADHESIVE	MON-ECO INDUSTRIES	ADHESIVE, MONO-TACK SPRAY 22-65	NON-RCRA
W90WDF00479	804000ADHESIVE	FOSTER	ADHESIVE-FOSTER 85-72 ADHESIVE	NON-RCRA
W90WDF00830	804000N009605	RALPH WILSON PLASTICS	ADHESIVE-LOKWELD 600 CONTACT ADHESIVE	D001 D035
W90WDF00593	804000F029498	LOCTITE CORPORATION	ADHESIVE-PERMATEX BLACK RTV SILICONE	NON-RCRA
W90WDF00394	6505011533042	PARK DAVIS	ADRENALIN CHLORIDE SOLUTION (EPINEPHRINE INJECTION)	P042
W90WDF01297	NT	AIRKEM	AERESOL DISINFECTANT	D001 D003
W90WDF00176	6550013359258	ORGANON TEKNIKA CORP	AEROBIC CULTURE BOTTLES	NON-RCRA
W90WDF00182	655000AEROBIC	ORGANON TEKNIKA	AEROBIC CULTURE BOTTLES	NON-RCRA
W90WDF00085	9150006169020	SHELL OIL	AEROSHELL GREASE 14	NON-RCRA

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00226	9150012623358	SHELL OIL	AEROSHELL GREASE 22	NON-RCRA
W90WDF01204	793000F047285	BERRYMAN PRODUCTS	AEROSOL B-12 CARBURATOR CLEANER	D001 D003
W90WDF00295	8030009381947	SPRAYON PRODUCTS	AEROSOL CORROSIVE PREVENTATIVE COMPOUND	D003 D005
W90WDF01031	8030013470979	LHB INDUSTRIES	AEROSOL CORROSIVE PREVENTATIVE	D001 D003
W90WDF01064	8030009381947	SPRAYON PRODUCTS	AEROSOL CORROSIVE PREVENTATIVE COMPOUND	D005
W90WDF01306	8030005468637	LHB INDUSTRIES	AEROSOL CORROSIVE PREVENTATIVE COMPOUND	D001 D005
W90WDF01131	6850008350484	LHB INDUSTRIES	AEROSOL DEICER-DEFROSTER	D001 D003
W90WDF00952	6850013530140	BENCHMARK COMMERCIAL INC.	AEROSOL DERMA SHIELD SKIN PROTECTANT	D001 D003
W90WDF01130	6850013718048	ECOLINK	AEROSOL ELECTRON CLEANING COMPOUND	D001 D003
W90WDF00803	6850013937433	BARGAMO CORP	AEROSOL FSX-3 CLEANING SOLVENT	D039
W90WDF01001	6850013937433	BARGAMO CORP	AEROSOL FXS-3 CLEANING SOLVENT	D039
W90WDF00856	813599N032065	INSTA FOAM PRODUCTS	AEROSOL GREAT STUFF FOAM	D001 D003
W90WDF00444	6840010676674	CSA LIMITED	AEROSOL INSECTICIDE	D003
W90WDF00657	7930004592247	PLAZE	AEROSOL OVEN CLEANING COMPOUND	D003
W90WDF00860	7930004592247	PLAZE INC.	AEROSOL OVEN CLEANING COMPOUND	D003
W90WDF01227	431000FILTER	8300 BLOCK	AEROSOL PUNCTURE DRUM FILTER(INSECTICIDE)	D040
W90WDF01226	431000FILTER	8300 BLOCK	AEROSOL PUNCTURE DRUM FILTER(PAINT)	D039 D040
W90WDF01109	684000INSECTICIDE	PUNCTURE DRUM	AEROSOL PUNCTURE DRUM INSECTICIDE	D015 D016
W90WDF01220	684000INSECTICIDE	8300 BLOCK	AEROSOL PUNCTURE DRUM INSECTICIDE	D040
W90WDF01132	431000FILTER	TEST RESULTS	AEROSOL PUNCTURE DRUM PAINT FILTER	D016 D018
W90WDF01111	915000POL	PUNCTURE DRUM	AEROSOL PUNCTURE DRUM POL	D008 D018
W90WDF01221	915000POL	8300 BLOCK	AEROSOL PUNCTURE DRUM POL	D040
W90WDF01133	431000FILTER	TEST RESULTS	AEROSOL PUNCTURE DRUM POL FILTER	D016 D018
W90WDF00938	684000INSECTICIDE	TEST RESULTS	AEROSOL PUNCTURE DRUM(INSECTICIDE)	D001 D040
W90WDF00940	431000FILTER	TEST RESULTS	AEROSOL PUNCTURE FILTER (INSECTICIDE)	D001 D040
W90WDF00941	431000FILTER	TEST RESULTS	AEROSOL PUNCTURE FILTER (PAINT)	D001
W90WDF00843	804000ADHESIVE	SHURETAPE INDUSTRIES	AEROSOL SHURETAPE 947 SPRAY ADHESIVE	NON-RCRA
W90WDF00825	8030005468637	LHB INDUSTRIES	AEROSOL SO-SURE CORROSIVE PREVENTATIVE COMPOUND	D001 D005
W90WDF01193	6850001053084	CHEMTRONICS	AEROSOL TF SOLVENT, CLEANING COMPOUND	D001 D003
W90WDF01042	2640001388324	TRUFLEX RUBBER	AEROSOL XC RAPID CLEAN BUFFER	D001 D003
W90WDF01262	8030001450383	DOW CORNING CORP	AEROSPACE SEALANT	NON-RCRA
W90WDF00682	6510011534536	TRIAD H & P INDUSTRIES INC	ALCOHOL PADS	D001
W90WDF00834	685000SILICONE	DAP	ALEX PLUS SILICON LATEX CAULK	NON RCRA
W90WDF01332	E	EARTH SCIENCE LAB INC.	ALGICIDE/BACTERICIDE	D002
W90WDF00966	6665011340885	TRUETECH DEMIL ITEM	ALKALINE BOTTLE(M272 KIT)	D002
W90WDF00403	6810011319688	HAWK CREEK LAB	621018	D002
W90WDF01099	6840000894664	EATON J T & CO	ALL WEATHER BAIT BLOCKS RODENTICIDE	NON-RCRA
W90WDF01096	6840004025411	SURECO	ALLPRO DURSBAN 4E	D001
W90WDF01540	8030007794699	AMCHEM PRODUCTS INC.	ALODINE 1200 KIT (BRUSH-ON)	D002 D007
W90WDF00666	655000N054666	BIOMERIEX VITEK INC	ALPHA NAPHTHOL	NON RCRA

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00670	655000F048616	DADE MICROSCAN	ALPHA NAPHTHOL	NON RCRA
W90WDF01366	6840014242493	WELLMARK INTERNATIONAL	ALTOSID LIQUID LARVICIDE CONCENTRATED	NON-RCRA
W90WDF01030	8030000572354	ACI CHEMICAL	ALUMBOND 1200	D007
W90WDF00659	6505012066009	ELI LILLY CO	AM0379 SODIUM THIOSULFATE INJECTION	NON-RCRA
W90WDF00908	685000D001861	MICHLIN DIAZO	AMMONIA ABSORBER	NON-RCRA
W90WDF00044	675000DEVELOPER	OCE IMAGING	AMMONIA DEVELOPER	D002
W90WDF00579	6505001060875	JAMES ALEXANDER CORP	AMMONIA INHALANT SOLUTION	D001
W90WDF00580	681000AMMONIA	JAMES ALEXANDER	AMMONIA INHALANTS	D001
W90WDF00199	6505001060875	NEWT ON INDUSTRIES	AMMONIA INHALANTS	D001
W90WDF00581	6505001060875	NEWT ON INDUSTRIES	AMMONIA INHALANTS	D001
W90WDF00537	681000SOLUTION	LAMOTTE CO	AMMONIA NITROGEN ABSORBING SOLUTION	D002
W90WDF00334	681000SOLUTION	LAMOTTE CO	AMMONIA NITROGEN ABSORBING SOLUTION	D002
W90WDF01441	681000AMMONIA	FISHER SCIENTIFIC CHEMICALS	AMMONIA SOLUTIONS	D002
W90WDF01460	681000AMMONIUM	CHEM ONE LTD	AMMONIUM BIFLUORIDE	D002
W90WDF01449	CHLORIDE	FISHER SCIENTIFIC	AMMONIUM CHLORIDE	NON-RCRA
W90WDF00613	685000AMMONIA	MICHLIN DIAZO PRODUCTS CORP.	AMMONIUM HYDROXIDE	D002
W90WDF00852	3610013621163	MICHLIN DIAZO PRODUCTS	AMMONIUM HYDROXIDE	NON-RCRA
W90WDF00335	681000REAGENT	LAMOTTE CO	AMONIA NITROGEN REAGENT #1	NON-RCRA
W90WDF00683	6810001237047	UNION CARBIDE CORP	AMYL ACETATE	D001
W90WDF01060	8030000812339	CHEMENCE	ANAEROBIC COMPOUNDS SEALING LOCKING & RETAINING	NON-RCRA
W90WDF00611	803000COMPOUND	CHEMENCE, INC.	S-22473E	NON RCRA
W90WDF00184	6550013359259	ORGANON TEKNIKA	ANAEROBIC CULTURE	NON-RCRA
W90WDF00186	6505010436795	HOLLISTER-STIER, MILES	ANA-KIT INSECT STING KIT	P042
W90WDF00181	655000ANEROBIC	ORGANON TEKNIKA CORP	ANEROBIC CULTURE BOTTLES	NON-RCRA
W90WDF01275	6505011749919	MERIDIAN MED TECHNOLOGIES	ANTIDOTE KIT, NERVE AGENT MARK I	NON-RCRA
W90WDF00822	8030010445034	BRAKER SEALANTS	ANTISEIZE COMPOUND	NON RCRA
W90WDF00153	80300005975367	JET-LUBE INC.	ANTI-SEIZE COMPOUND	D001 D008
W90WDF00977	803000ANTISIEZE	CHEMTOOL(CAT)	ANTI-SEIZE COMPOUND 5P3931	NON-RCRA
W90WDF01259	68500006560926	CHEMICAL COMMODITIES AGCY	ANTISETTING COMPOUND	NON-RCRA
W90WDF00221	80300000878630	MAKOOR PRODUCTS	ANTI-SIEZE COMPOUND	NON-RCRA
W90WDF00568	68300005648989	AIRGAS	ARGON COMPRESSED GAS CYLINDER	NON-RCRA
W90WDF00042	685000N022266	WHITTAKER YARDNEY	ASBESTOS -BRAKE SHOES/PADS	NON-RCRA
W90WDF00625	685000ASBESTOS	TEST RESULTS	ASBESTOS CONTAINING MATERIAL	NON-RCRA
W90WDF00149	531000TILE	SAMPLE	ASBESTOS CONTAINING MATERIAL	NON-RCRA
W90WDF01410	685000ASBESTOS	JRTC OPS GP	ASBESTOS CONTAINING MATERIAL	NON-RCRA
W90WDF00299	685000ASBESTOS	TEST RESULTS	ASBESTOS CONTAINING MATERIAL	NON-RCRA
W90WDF00609	685000N022266	WHITTAKER-TARDNEY POWER SYSTEMS	ASBESTOS MATERIAL (PIPE)	NON RCRA
W90WDF00620	304000N032269	RAYMARK CORP	ASBESTOS, CLUTCH PADS	NON RCRA
W90WDF00420	561000N047335	PACE PRODUCTS	ASPHALT RESIDUE (CHUCKHOLE REPAIR)	NON-RCRA
W90WDF00811	9150001595012	ULTRACHEM INC	ASSEMBLY FLUID	NON RCRA

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W90WDF00877	6505009269083	SURVIVAL TECHNOLOGIES	ATROPINE INJECTION	NON RCRA
W90WDF01504	793000ACID RINSE	AUTO CHLOR SYSTEM	AUTO-CHLOR LAUNDRY SOUR	D002
W90WDF01125	685000F028338	RADIATOR SPECIALTY	B1-67 POWDER BOILER SEAL	NON-RCRA
W90WDF01350	6810-00-CLEANER	BERRYMAN PRODUCTS INC.	B-9 CHEM-DIP CARBURATOR AND PARTS CLEANER	D024 D025
W90WDF00046	6140010718560	MARATHON POWER	BATTERY - 28087 4 P	WASTE
W90WDF00451	6140010897636	SAFT AMERICA	BATTERY - AIRCRAFT NICAD	WASTE
W90WDF00310	6140008816887	SAFT AMERICA	BATTERY - AIRCRAFT NICAD	WASTE
W90WDF00480	6140011141219	SAFT AMERICA	BATTERY - AIRCRAFT NICAD	WASTE
W90WDF00080	6135008380706	UNICOR FEDERAL PRISON	BATTERY - BA 1568/ U MERCURY	WASTE
W90WDF00081	6135000738939	DURACELL	BATTERY - BA 1574/U MERCURY	WASTE
W90WDF00038	6135010946536	ALEXANDER	BATTERY - BA 1588/U MERCURY	WASTE
W90WDF00945	6135004113171	BREN-TRONICS INC.	BATTERY - BA 3515A/PRC-66 ALKALINE	WASTE
W90WDF00026	6135004503528	DURACELL	BATTERY - BA 3517/U ALKALINE	WASTE
W90WDF00028	6135012354168	POWER CONVERSION	BATTERY - BA 5112 LITHIUM SULFUR DIOXIDE	WASTE
W90WDF01011	6135014557947	BREN TRONICS	BATTERY - BA 5368/U MANGANESE DIOXIDE	WASTE
W90WDF00879	6135014559646	FEDERAL PRISON INDUSTRIES	BATTERY - BA 5374/U LITHIUM	WASTE
W90WDF00032	6135010882707	POWER CONVERSION	BATTERY - BA 5557/U LITHIUM SULFUR DIOXIDE	WASTE
W90WDF00039	6135010882708	POWER CONVERSION	BATTERY - BA 5588/U LITHIUM SULFUR DIOXIDE	WASTE
W90WDF00035	6135010363495	POWER CONVERSION	BATTERY - BA 5590/U LITHIUM	WASTE
W90WDF00289	6135010342239	HAWKER ETERNACELL	BATTERY - BA 5598/U LITHIUM SULFUR DIOXIDE	WASTE
W90WDF00029	613500BATTERY	SAFT AMERICA	BATTERY - BA 5599/U LITHIUM SULFUR DIOXIDE	WASTE
W90WDF00031	6135011682944	BALLARD BATTERY	BATTERY - BA 5600/U LITHIUM SULFUR DIOXIDE	WASTE
W90WDF00036	6135013621368	POWER CONVERSION	BATTERY - BA 5800/U LITHIUM SULFUR DIOXIDE	WASTE
W90WDF00030	6135010905364	SAFT AMERICA	BATTERY - BA 5847/U LITHIUM SULFUR DIOXIDE	WASTE
W90WDF00083	6135012023387	EVEREADY BATTERY	BATTERY - BA 6598/U LITHIUM THIONYL CHLORIDE	WASTE
W90WDF00845	6135009352589	BREN-TRONICS	BATTERY - BA-3036 ALKALINE	NON-RCRA
W90WDF01110	6135014424580	EVEREADY BATTERY CO.	BATTERY - BA-3389/U ZINC	WASTE
W90WDF00110	6135010342239	SAFT AMERICA	BATTERY - BA-5598/U LITHIUM SULFUR DIOXIDE	WASTE
W90WDF00880	6135011682944	BALLARD BATTERY	BATTERY - BA94/U LITHIUM SULFUR DIOXIDE	WASTE
W90WDF00942	6140014198194	BREN-TRONICS	BATTERY - BB 2847/U LITHIUM	WASTE
W90WDF00271	6140004548261	BREN-TRONICS	BATTERY - BB 287 NICAD	WASTE
W90WDF00756	613500BATTERY	BJACH	BATTERY - BB 388/U	WASTE
W90WDF00037	6140014198187	BREN TRONICS	BATTERY - BB 390/U NIMH	WASTE
W90WDF00943	6140009213670	ENERGIZER	BATTERY - BB 412/U NICAD	WASTE
W90WDF01076	6140010461116	SAFT AMERICA	BATTERY - BB 433 A/A NICAD	WASTE
W90WDF01113	6140013314013	MAGNUM POWER SYSTEM LTD.	BATTERY - BB 490/U LEAD ACID	WASTE
W90WDF00897	6140010565321	BRENTRONICS	BATTERY - BB 503/TAS NIMH SEALED	WASTE
W90WDF00082	6140010429942	LYNTRONICS	BATTERY - BB 516/U NICAD	WASTE
W90WDF00474	6140012119906	SAFT AMERICA	BATTERY - BB 559/A NICAD	WASTE
W90WDF00287	6140010841460	BREN-TRONICS	BATTERY - BB 586/U NICAD	WASTE



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W90WDF00079	6140010633918	BREN-TRONICS	BATTERY - BB 590/U NICAD	WASTE
W90WDF00974	6140010464286	BREN-TRONICS	BATTERY - BB 704/U NICAD	WASTE
W90WDF00719	6140001110500	EAGLE-PICHER INDUSTRIES INC	BATTERY - CAREFREE LEAD ACID RECHARGABLE	WASTE
W90WDF01138	6140008361283	EXIDE	BATTERY - DRY CHARGE LEAD ACID	WASTE
W90WDF00326	614000BATTERY	SANYO	BATTERY - FAST PAK NICAD	WASTE
W90WDF00775	614000BATTERY	SANYO ENERGY	BATTERY - FAST PAK NICAD	WASTE
W90WDF00846	6140011747249	JOHNSON CONTROLS GLOBE BATTERY	BATTERY - GEL CELL LEAD ACID	WASTE
W90WDF00034	6140011476850	MATSUSHITA ELECTRIC	BATTERY - LCR6 V6.5 NICAD	WASTE
W90WDF00780	614000BATTERY	GS BATTERY	BATTERY - LEAD ACID	WASTE
W90WDF00314	614000BATTERY	POWER-SONIC	BATTERY - LEAD ACID	WASTE
W90WDF00932	6140010212198	CONCORDE BATTERY CORP	BATTERY - LEAD ACID DRY	WASTE
W90WDF00900	613500BATTERY	SANYO	BATTERY - LITHIUM ION	WASTE
W90WDF00881	615000BATTERY	EVERYREADY	BATTERY - LITHIUM ION RECHARGABLE	WASTE
W90WDF00027	6135123098604	GERMAN MILITARY	BATTERY - LITHIUM SULFUR DIOXIDE	WASTE
W90WDF00325	6140004103334	BATTERY NETWORK EAST	BATTERY - NICAD	WASTE
W90WDF00599	6140013158599	SANYO ENERGY	BATTERY - NICAD	WASTE
W90WDF00045	6140010633918	EMERSON ELECTRIC	BATTERY - NICAD	WASTE
W90WDF00279	614000BATTERY	ALEXANDER	BATTERY - NICAD	WASTE
W90WDF00731	6140012317781	INTERMEC CORP	BATTERY - NICAD	WASTE
W90WDF00220	6140010565321	BREN-TRONICS	BATTERY - NICAD	WASTE
W90WDF00872	614000BATTERY	PANASONIC	BATTERY - NICAD	WASTE
W90WDF00885	614000BATTERY	FEDCO ELECTRONICS	BATTERY - NICAD	WASTE
W90WDF00277	614000BATTERY	MARATHON POWER	BATTERY - NICAD	WASTE
W90WDF00842	6140012518652	RACAL COMMUNICATIONS	BATTERY - NICAD	WASTE
W90WDF00784	614000BATTERY	ALEXANDER MFG CO	BATTERY - NICAD	WASTE
W90WDF00783	614000BATTERY	ENERGIZER POWER SYSTEMS	BATTERY - NICAD	WASTE
W90WDF00280	614000BATTERY	SCALE-TRONIX	BATTERY - NICAD	WASTE
W90WDF00781	614000BATTERY	POWER SONIC	BATTERY - NICAD	WASTE
W90WDF00884	6140014219284	AVEX (HEWLETT PACKARD)	BATTERY - NICAD	WASTE
W90WDF00308	614000BATTERY	UNKNOWN	BATTERY - NICAD	WASTE
W90WDF00309	614000BATTERY	UNKNOWN	BATTERY - NICAD	WASTE
W90WDF00272	614000BATTERY	ALEXANDER	BATTERY - NICAD	WASTE
W90WDF00890	614000BATTERY	FEDCO ELECTRONICS INC.	BATTERY - NIMH	WASTE
W90WDF00175	614000BATTERY	DURACELL	BATTERY - NIMH	WASTE
W90WDF00476	613500N072131	DURACELL	BATTERY - NIMH	WASTE
W90WDF00720	6140012791961	EXIDE CORP	BATTERY - NP 4 12 SEALED LEAD ACID	WASTE
W90WDF00132	6140012575821	EXIDE CORP	BATTERY ACID (ELECTROLYTE)	D002
W90WDF00985	614000BATTERY	TRW	BATTERY BELT	WASTE
W90WDF00464	6140010906667	TECHNACELL, POWERSONIC	BATTERY EP 6330-34 LEAD ACID	WASTE
W90WDF00497	614000N042094	YUASA BATTERY	BATTERY FLUID	D002

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF01015	6810002499354	SCHOLLE CORP	BATTERY FLUID, ACID(ELECTROLYTE)	D002
W90WDF00779	614000BATTERY	EVEREADY	BATTERY MERCURY	WASTE
W90WDF01253	613500BATTERY	DURACELL	BATTERY MERCURY	WASTE
W90WDF00688	6135000503280	EVEREADY	BATTERY MERCURY NON RECHARGABLE	WASTE
W90WDF00171	6140011785580	MOTOROLA	BATTERY NICAD	WASTE
W90WDF00734	614000NICAD	SANYO ENERGY (USA) CORP	BATTERY NICAD	WASTE
W90WDF00959	685000N012186	BOWMAN DISTRIBUTION	BATTERY TERMINAL COATING	D001 D003
W90WDF00278	614000BATTERY	SANYO	BATTERY, CADNICA NICAD	WASTE
W90WDF00847	6140012998	MOTOROLA	BATTERY, CADNICA NICKEL CADMIUM	WASTE
W90WDF00782	614000BATTERY	PANASONIC	BATTERY, NICAD	WASTE
W90WDF00887	6135002962619	BATTERY TECHNOLOGY CO	BATTERY, PRIMARY BATTERY MERCURY	WASTE
W90WDF00291	6140014267662	ALEXANDER	BATTERY, R8607 NICKEL CADMIUM	WASTE
W90WDF00288	613500BATTERY	VARTA INDUSTRIAL	BATTERY, T 110B NICKEL CADMIUM	WASTE
W90WDF01359	681000COMPOUND	BCC PRODUCTS INC.	BC 9060 COMPOUND	NON-RCRA
W90WDF01200	685000F015009	BOWMAN DISTRIBUTION	BELT DRESSING AEROSOL	D001 D003
W90WDF01217	803000F005211	BELZONA MOLECULAR	BELZONA MOLECULAR G.S.C. SOLIDIFIER AND BASE	D001
W90WDF00319	6810000636955	FISHER SCIENTIFIC	BENZALDEHYDE	NON-RCRA
W90WDF00510	6810002815272	FISHER SCIENTIFIC, CHEMICAL DIV	BENZENE	U019
W90WDF00195	6505002617257	HUMCO HOLDING GROUP	BENZON TINCTURE COMPOUND	D001
W90WDF00261	6505001487096	PURDUE FREDERICK CO	BETADINE SOLUTION	NON-RCRA
W90WDF00301	685000LIQUID	TEST RESULTS	BIDS BIOSAMPLER	D022
W90WDF00234	685000LIQUID	LAB RESULTS	BIDS CYTOMETER WASTE LIQUID	D022
W90WDF01224	685000ASBESTOS	TEST RESULTS CABINET	BLACK CABINET TOP CONTAINING ASBESTOS	NON-RCRA
W90WDF00891	793000POLISH	SOUTHEND JANITORIAL SUPPLY	BLACK GLOSS	NON RCRA
W90WDF01478	751000INK	DIAGRAPH AN ITW COMPANY	BLACK INK CARTRIDGE	D001
W90WDF01325	561000N034681	GIBSON HOMANS CO	BLACKJACK FBRD ALUM ROOF CTG	D001
W90WDF00391	6505014171268	BLAIREX LABORATORIES	BLAIREX STERILE BRONCHO SALINE SOLUTION	NON-RCRA
W90WDF00489	535000BLAST	TEST RESULTS	BLAST MEDIA	NON-RCRA
W90WDF00647	675000BLEACH	KODAK	BLEACH PROCESS E-6 PART A	NON-RCRA
W90WDF00648	675000BLEACH	KODAK	BLEACH PROCESS E-6 PART B	NON-RCRA
W90WDF00961	6665011340885	TRUETECH DEMIL ITEM	BLUE BAND DETECTOR TUBE(M272 KIT)	D009
W90WDF00063	803000SILICONE	LOCTITE	BLUE RTV SILICONE GASKET MAKER	NON-RCRA
W90WDF00145	6850006649067	UNI-KEM INTERNATIONAL	BLUE TOOLMAKERS INK (DYE)	D001
W90WDF00472	803000N078985	DYNATRON/BONDO	BONDO ULTRA VIOLET CURABLE AUTOBODY FILLER	D001
W90WDF00340	681000BORIC ACID	CHEMPURE	BORIC ACID	NON-RCRA
W90WDF00311	6810002646535	SPECTRUM CHEMICAL	BORIC ACID	NON-RCRA
W90WDF00677	6550011502983	VITROS CHEMISTRY	BOVINE ALBUMIN	NON RCRA
W90WDF01154	7930013936647	STARCO CHEMICAL	BOWLAWAY CLEANING COMPOUND	D002
W90WDF01402	685000SOLVENT	INLAND TECHNOLOGY INC.	BRAKE PREP	D008
W90WDF01164	7930013808381	JOHNSON WAX	BRAVO EXTRA HEAVY DUTY FLOOR STRIPPER	D002

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF01365	793000F039831	HOTSY CORP	BREAKTHROUGH	NON-RCRA
W90WDF00073	681000BUFFER	HACH CO	BUFFER SOLUTION(PH 4.01+-01)	NON-RCRA
W90WDF00492	2640001388324	PANG RUBBER CO.	BUFSOL SPRAY CAN BUFFING SOLUTION	D003 D039
W90WDF00981	685000WASTE	TEST RESULTS	BURN POWDER SLUDGE	D030
W90WDF00136	683000CYLINDER	AERVOE PACIFIC	BUTANE FUEL CARTRIGE	D001
W90WDF00137	683000CYLINDER	SUNFLAME	BUTANE GAS CARTRIGE	D001
W90WDF00001	4240011192315	RACAL FILTER TECH.	C2 CANISTER	D007 D011
W90WDF00125	683000D005581	SUUNTO USA	C206 BUTANE (CAMPING GAZ)	D001
W90WDF00641	4240013611319	DEMIL ITEM	C2A1 CANISTER	D011
W90WDF00577	650500CAFFIENE	MALLINKRODT	CAFFIENE CITRATED POWDER	NON-RCRA
W90WDF00739	681000CHLORITE	ARCH CHEMICALS	CALCIUM HYPOCHLORITE	D001
W90WDF01453	681000CALCIUM	FISHER SCIENTIFIC	CALCIUM CHLORIDE DIHYDRATE	NON-RCRA
W90WDF01022	681000SOLUTION	DADE BEHRING	CALCIUM CHLORIDE SOLUTION	NON-RCRA
W90WDF00623	6660009990743	JOHNSON MATTHEY	CALCIUM HYDRIDE	D001 D003
W90WDF00471	6810002550471	VAN WATERS AND ROGERS	CALCIUM HYPOCHLORITE	D001
W90WDF00375	6810002550471	LOS ANGELES CHEMICAL	CALCIUM HYPOCHLORITE GRANULAR	D001
W90WDF00462	6810002550471	PPG INDUSTRIES	CALCIUM HYPOCHLORITE TECHNICAL	D001
W90WDF00059	6810013584336	CHEMICAL COMMODITIES INC.	CALCIUM HYPOCHLORITE, TECHNICAL	D001
W90WDF00232	6810002424770	OCTAGON PROCESS	CALCIUM HYPOCHLORITE, TECHNICAL	D001
W90WDF00949	6810002550472	QUALCO INC.	CALCIUM HYPOCHLORITE, TECHNICAL	D001
W90WDF01063	6850010115669	BARTLETT CHEMICALS	CALCIUM HYPOCHLORITE, TECHNICAL	D001
W90WDF01296	681000CLEANER	DPW ROAD AND GROUNDS	CALIBRATING FLUID AIRCRAFT FUEL SYSTEMS	D001
W90WDF00505	804000ADHESIVE	CARBOLINE CO	CAR PARTS CLEANER	NON-RCRA
W90WDF00498	804000ADHESIVE	CARBOLINE CO	CARBOLINE 890 PART A	D001
W90WDF00233	915000CARDBOARD	SPILL CLEANUP	CARBOLINE 890 PART B	D001
W90WDF01484	6850-013697897	BARTLETT CHEMICALS	CARDBOARD CONTAMINATED WITH OIL	NON-RCRA
W90WDF01387	6850006854763	COSMECHEM CO.	CATFLOC 1020 POLYELECTROLYTE	NON-RCRA
W90WDF00179	6840013890724	MICRO-ASEPTIC PRODUCTS	CAUSTIC PIPE CLEANER	D002
W90WDF00990	915000CLEANER	RADIATOR SPECIALTY	CAVICIDE DISINFECTANT/CLEANER	D001
W90WDF00772	681000OXIDIZER	CALGON (NALCO)	CC 3K CARBURETOR CLEANER	NON-RCRA
W90WDF01121	685000CHEMICAL	CELITE	CCL-90 CLOSED LOOP TREATMENT	D001
W90WDF00473	6750005280473	CLAYTON CHEMICAL	CELITE - DIATOMITE POOL FILTER	NON-RCRA
W90WDF00485	6750005280473	CLAYTON CHEMICAL	CFH FIXER WITH HARDENER PART A	NON-RCRA
W90WDF00992	685000N061411	PERFECT EQUIPMENT CORP	CFH FIXER/HARDENER PART B	NON-RCRA
W90WDF01185	2640002423467	TRUFLEX RUBBER	CHEMICAL ACTIVATOR CEMENT	NON-RCRA
W90WDF00955	6840011378456	GRAYSON O COMPANY	CHEMICAL VULCANIZING FLUID, 21	D040
W90WDF00174	6850013526129	DEATRICK & ASSOCIATES	CHIGG AWAY	NON-RCRA
W90WDF00693	681000NO68615	JET INC	CHLOR FLOC EMERGENCY DRINKING WATER TABLETS	NON-RCRA
W90WDF00128	6850002706225	TRUETECH INC.	CHLORINATING TABLETS (JET-CHLO)	D001
W90WDF00434	6810013898406	LAMOTTE CHEMICAL	CHLORINATION KIT, WATER PURIFICATION	D001
			CHLORINE TESTABS	D003

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00438	6850013526129	PATRICK AND ASSOCIATES	CHLORO FLOC DRINKING WATER TABLETS	NON-RCRA
W90WDF00724	681000N030136	GARRATT-CALLAHAN CO.	CHROMATE INDICATOR	NON-RCRA
W90WDF00551	681000N069420	HACH CO	CHROMAVAR 3 CHROMIUM REAGENT 25050	NON-RCRA
W90WDF01014	6810002646517	FEDERAL SPECS.	CHROMIUM TRIOXIDE	D007
W90WDF01033	6850009652332	COX INDUSTRIES	CI-2000 CARBON REMOVING COMPOUND	NON-RCRA
W90WDF00130	6840010667466	ADVANCED STERILIZATION PRODUCTS	CIDEX ACTIVATED DIALDEHYDE SOLUTION/ACTIVATOR	NON-RCRA
W90WDF00481	6810011643975	LOS ANGELES CHEMICAL	CITRIC ACID, ANHYDROUS	D002
W90WDF00636	7930013507035	PENETONE	CITRIKLEEN CLEANING COMPOUND	D001
W90WDF00875	793000F042149	OATEY	CLEANER 30782	D001 D035
W90WDF00400	7930013670999	ZEP MFG.	CLEANER SOLUTION (RING MASTER)	D001 D002
W90WDF00404	6850010457929	CREST INDUSTRIAL	CLEANING COMPOUND AIRCRAFT SURFACE	NON-RCRA
W90WDF00704	6850001817594	OCTAGON PROCESS INC.	CLEANING COMPOUND ENGINE GAS PATH	NON-RCRA
W90WDF01169	7930006647483	CONTINENTAL CHEM	CLEANING COMPOUND PORCELAIN	D002
W90WDF01324	681000SOLUTION	FISHER SCIENTIFIC	CLEANING SOLUTION	D002 D007
W90WDF01416	681000SOLVENT	AECOM	CLEANING SOLVENT	NON-RCRA
W90WDF00571	4210002026465	GENERAL FIRE EXTINGUISHER	CO2 FIRE EXTINGUISHER	NON-RCRA
W90WDF01091	804000F036126	VANCE BROTHERS	COAL TAR EMULSION	NON-RCRA
W90WDF01347	5970009623335	STAR BRITE	COATING ELECTRICAL	D001 D043
W90WDF01418	7930000CLEANER	STATE CHEMICAL MANUFACTURING COMPANY	COIL COMMANDO-COIL CLEANER	D002
W90WDF00957	685000D004343	CRAMER PRODUCTS	COLD SPRAY(AEROSOL)	D001 D003
W90WDF00124	683000CYLINDER	COLEMAN	COLEMAN PEAK BUTANE/PROPANE MIXTURE	D001
W90WDF00569	683000CYLINDER	COLEMAN	COLEMAN POWER MAX SMALL BUTANE/PROPANE CYLINDER	D001
W90WDF00928	915000F037738	KEEN WORLD MARKETING LIMITED	COLIBRI PREMIUM BUTANE FUEL REFILL	D001 D003
W90WDF00397	6505012104470	HUMCO MOLDING GROUP	COLLODION FLEXIBLE	D001
W90WDF00557	6750010418684	EASTMAN KODAK	COLOR DEVELOPER PROCESS E-6 PART A	D002
W90WDF00634	6750010418684	KODAK	COLOR DEVELOPER PROCESS E-6 PART B	NON-RCRA
W90WDF00651	6750011691851	KODAK	COLOR SLIDE BLEACH FIX B	NON-RCRA
W90WDF01151	675000TONER	XEROX	COLORANT TONER	D001
W90WDF00187	6505002617257	ACME UNITED CORP	COMPOUND TINCTURE BENZOIN	D001
W90WDF00109	681000MOLD	CONAP	CONAP MOLD RELEASE MR-5010	U226
W90WDF00066	803000URETHANE	CONAP	CONAP TU-4010 PART B	D009
W90WDF01181	5970001810190	CONAP INC.	CONATHANE CE-115 PART B CURATIVE	D001
W90WDF00140	803000CONATHANE	CONAP	CONATHANE TU4010 HARDNESS MODIFIER PART C	NON-RCRA
W90WDF01240	685000HMC0002	RADIATOR SPECIALTY COMPANY	CONCENTRATED RADIATOR FLUSH	NON-RCRA
W90WDF01273	915000ANTIFREEZE	DFCA MOTOR CRAFT SHOP	CONTAMINATED ANTIFREEZE WITH BENZENE	D018
W90WDF01526	681000SOLVENT	INLAND	CONTAMINATED INLAND SOLVENT	D001 D018
W90WDF00051	793000SOLVENT	TEST RESULTS	CONTAMINATED SOLVENT	D027
W90WDF01419	681000SOLVENT	INLAND	CONTAMINATED USED INLAND FILTER SLUDGE WITH PAINT	D010
W90WDF00672	6550011458134	RICCA CHEMICAL COMPANY	COPPER SULFATE	NON RCRA
W90WDF00804	8030013470979	LHB INDUSTRIES	CORROSION PREVENTATIVE	D001

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00100	8030008376557	DAUBERT CHEMICAL	CORROSION PREVENTIVE COMPOUND (NOX RUST 208)	D001 D008
W90WDF00144	8030002133279	LHB INDUSTRIES	CORROSION PREVENTIVE COMPOUND (SO-SURE)	D001 D005
W90WDF01256	6850002705551	UNI-KEM INTER. INC.	CORROSION REMOVING COMPOUND	D002
W90WDF01238	6850000N075587	CORROSION TECHNOLOGIES	CORROSION X HEAVY DUTY PREVENTIVE	NON-RCRA
W90WDF01538	68500006561292	MAKOOR PRODUCTS CO INC.	CORROSIVE REMOVING COMPOUND	D002
W90WDF01380	343900ELECTRODE	LINCOLN ELECTRIC COMPANY	COVERED ELECTRODE	NON-RCRA
W90WDF01120	803000PATCHING	ARMOR RESEARCH CO	CRETE - CONCRETE PATCHING COMPOUND	NON-RCRA
W90WDF01255	1365006908656	FEDERAL LAB	CS	NON-RCRA
W90WDF01363	803000COMPOUND	SYMONS	CURE & SEAL 1315	D001
W90WDF00644	803000N021388	AKZO COATING	CURING AGENT X-423	D001
W90WDF01088	561000N072310	SEABORD ASPHALT	CUTBACK RC TACK COAT, ASPHALT	D001
W90WDF00618	ID	OCTAGON PROCESS INC.	CUTTING FLUID	NON RCRA
W90WDF00108	685000N030690	KAR PRODUCTS	CUTTING TOOL COOLANT	U226
W90WDF00258	684000HMC0016	OXYCHEM	CYANURIC ACID DRY LESLIE CONDITIONER	NON-RCRA
W90WDF00275	614000BATTERY	HAWKER ENERGY	CYCLON LEAD ACID BATTERY	WASTE
W90WDF00177	6550011536689	STEPHENS SCIENTIFIC	CYTOLOGY SPRAY FIXATIVE	D001
W90WDF01343	685000N062266	SANSHER CORP	DAD'S EASY SPRAY REMOVER	D001
W90WDF00318	9150002698246	SIL-TECH CORP	DAMPING FLUID(SILICONE BASE)	NON-RCRA
W90WDF00994	685000F043011	MITA COPYSTAR AMERICA	DC-3055 BLACK TONER	NON-RCRA
W90WDF00054	6850002976653	OCTAGON PROCESS	DECONTAMINATION AGENT, STB	D001
W90WDF00993	6840013093890	JOHNSON S C	DEEP WOODS OFF INSECT REPELLANT III	D001
W90WDF00760	7930014120978	ZEP	DEGREASER, PART CLEANER	D002 D008
W90WDF01370	6840014313357	ZENECA	DEMAN PESTAB INSECTICIDE	NON-RCRA
W90WDF00216	6810002056786	CSD INC.	DENATURED ALCOHOL	D001
W90WDF00249	801000F019419	KLEAN STRIP	DENATURED ALCOHOL	D001
W90WDF00519	6810002010907	PHARMCO PRODUCTS	DENATURED ALCOHOL	D001
W90WDF00146	6810005437415	HOME OIL	DENATURED ALCOHOL, O-E-760 TYPE III	D001
W90WDF00049	6810007822686	HOME OIL CO.	DENATURED ALCOHOL, O-E-760 TYPE IV	D001
W90WDF00154	681000AMALGAM	MEDACC	DENTAL AMALGAM	NON-RCRA
W90WDF00759	681000AMALGRAM	BRENTONICS	DENTAL AMALGAM	NON-RCRA
W90WDF00712	7930002829699	LHB INDUSTRIES	DETERGENT GENERAL PURPOSE NONIONIC	NON-RCRA
W90WDF01168	7930005262919	LHB INDUSTRIES	CLEANER	NON-RCRA
W90WDF00437	685000F045930	XEROX	DEVELOPER	NON-RCRA
W90WDF01005	R	KODAK	DEVELOPER REPLENISHES, RP X-OMAT PART A	NON-RCRA
W90WDF01006	R	KODAK	DEVELOPER REPLENISHES, RP X-OMAT PART B	D001 D002
W90WDF01003	R	KODAK	DEVELOPER REPLENISHES, RP X-OMAT PART C	NON-RCRA
W90WDF00937	675000DEVELOPER	KODAK	DEVELOPER, POLYMAX T (CONCENTRATE)	NON-RCRA
W90WDF00454	6750013424343	AGFA CORPORATION	DEVELOPER/REPLENISHES G153 PART A	NON-RCRA
W90WDF00455	6750013424343	AGFA CORP.	DEVELOPER/REPLENISHES G153 PART B	D001
W90WDF00122	2910006469727	QUICK START	DIESEL STARTING FLUID	D001

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF01032	681000954804	PHOENIX INDUSTRIES	DIETHYLENETRIAMINE, TECHNICAL	D002
W90WDF00664	6550DIMETHY	DADE MICROSCAN	DIMETHY N-N	NON-RCRA
W90WDF01358	6850-0143444 10	FOUR STAR CHEMICAL	DIO-TRONIC, LIQUID CLEANER	NON-RCRA
W90WDF00917	6840007534973	THE ARCH CORP	DIPHACINONE (RODENT BAIT)	NON-RCRA
W90WDF01172	7930009856905	JABRO BATTERIES	DISHWASHING COMPOUND MACHINE	D002
W90WDF01171	7930002814731	JL HOFFMAN	DISHWASHING COMPOUND, HAND	NON-RCRA
W90WDF00691	6840013727778	METREX RESEARCH CORP	DISINFECTANT GENERALPURPOSEL	D002
W90WDF00250	793000F038565	NATIONAL CHEMSEARCH	DISINFECTANT, 5034 PROMINE PLUS (AEROSOL)	D001
W90WDF01000	6840005518346	LIGHTHOUSE FOR THE BLIND	DISINFECTANT, DETERGENT, GENERAL PURPOSE(PINE OIL)	NON-RCRA
W90WDF00826	6840008106396	H & S CHEMICAL	DISINFECTANT, FOOD SERVICE	D001
W90WDF00129	6840005261129	METREX RESEARCH INC.	DISINFECTANT/DECONTAMINANT CLEANER	D001
W90WDF00300	664000RAGS	TEST RESULTS	DISTILLER RAGS	NON-RCRA
W90WDF01128	664000SLUDGE	TEST RESULTS HAZMART	DISTILLER SLUDGE	NON-RCRA
W90WDF00147	793000DEGREASER	ARMOR RESEARCH CO	DOFF ENZYMATIC DEGREASER/CLEANER	NON-RCRA
W90WDF01065	793000N042768	MISCO PRODUCTS	DOWN UNDER ACRYLIC FLOOR SEALER	NON-RCRA
W90WDF00499	681000N071138	LAMOTTE CO	DPD 1B CHLORINE REAGENT	D002
W90WDF00864	6870012425750	HACH CO.	DPD FREE CHLORINE REAGENT	NON-RCRA
W90WDF00424	6665014445484	HACH CO	DPD FREE CHLORINE REAGENT 21055	NON-RCRA
W90WDF00268	681000N032413	HACH CO	DPD FREE CHLORINE REAGENT 25020	NON-RCRA
W90WDF00267	685000N035843	HACH CO	DPD TOTAL CHLORINE REAGENT 20530	NON-RCRA
W90WDF00810	6850013771809	CONOCO	DRY CLEANING SOLVENT	NON-RCRA
W90WDF00077	6850002811985	CSD INC.	DRY CLEANING SOLVENT TYPE I	D001
W90WDF00209	6850002745421	CHEMICAL SPECIALISTS	DRY CLEANING SOLVENT, PD680 TYPE II	D001
W90WDF01159	685000N017295	XEROX	DRY INK PLUS, 1040	NON-RCRA
W90WDF00290	999900SPILL	CLEANUP	DRY SWEEP CONTAMINATED WITH BATTERY ACID	D002
W90WDF00839	913000DRYSWEEP	10TH MNT	DRY SWEEP/SOIL CONTAMINATED W/MOGAS	NON-RCRA
W90WDF00853	564000F014933	WELCO	DRY WALL COMPOUND	NON-RCRA
W90WDF01507	8010012763639	HENTZEN	DRYSWEEP CONTAINING WASTE PAINT	D007
W90WDF01408	803000SPILL	DOL LH AVIM	SOLVENT/DETERGENT	NON-RCRA
W90WDF01474	681000SOLVENT	DOL OGM	TETRACHLORETHANE	D039
W90WDF01425	913000SPILL	SHELL	UP)	D001 D018
W90WDF01254	803000AEROSOL	ARMOR RESEARCH CO	DRYZIT 730	D001 D003
W90WDF00912	7930013740994	DYNAMOLD INC	DS-108 SOLVENT	D001
W90WDF01390	6850011368889	U.S. ARMY CBD COMMAND	DS2	D002
W90WDF00358	6840012103392	DOW ELANCO	DURSBAN L.O. SPECIALTY INSECTICIDE	D001 D018
W90WDF01480	803000BONDO	BONDO CORPETATION	DYNATRON GRAY SEAM SEALER	D001
W90WDF01407	681000CLEANER	ENVIROFORM TECHNOLOGIES	EASY DECON LIQUID BINARY BLEND	NON-RCRA
W90WDF00689	6550EHRlich	BLOMORIEUX INC.	EHRICH REAGENT	D001 D002
W90WDF00594	6750010843207	KODAK	EKTAFLO FIXER	NON-RCRA
W90WDF01267	533000RESIN	BASF	ELASTOPOR P100	NON-RCRA

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00469	6810002646715	ELECTROFILM	ELECTRO MOLY POWDER	NON-RCRA
W90WDF01523	681000SOLVENT	ECOLINK	ELECTRON	NON-RCRA
W90WDF00121	2910011289537	KALD BAN INTERNATIONAL	ENGINE STARTING FLUID	D001
W90WDF00227	685000N075423	PRESTONE PRODUCTS	ENGINE STARTING FLUID	D001
W90WDF01530	681000CLEANER	PROSOCO, INC.	ENVIRO KLEAN MORTAR & GROUT REMOVER	NON-RCRA
W90WDF00578	6505010932384	ABOTT LABORATORIES	EPINEPHRIN INJECTION	P042
W90WDF00660	6505011533045	AMERICAN REGENT LAB INC.	EPINEPHRINE INJECTION	P042
W90WDF00188	6505001334449	WYETH-AYERST LABORATORIES	EPINEPHRINE INJECTION	P042
W90WDF00377	6505010436195	ESI-LEDERLE GENERICS	EPINEPHRINE INJECTION	P042
W90WDF00194	6505010932384	HOSPITAL PRODUCTS DIVISION	EPINEPHRINE INJECTION	P042
W90WDF00201	6505001334449	WYETH-AYERST	EPINEPHRINE INJECTION	P042
W90WDF00206	6505010436795	WYERST LABORATORIES	EPINEPHRINE INJECTION	P042
W90WDF00376	6505010436795	HOLLISTER-STIER	EPINEPHRINE INJECTION	P042
W90WDF00778	6505001334449	LUITPOLD PHARMACEUTICALS INC	EPINEPHRINE INJECTION	P042
W90WDF00385	6505002998760	ESI-LEDERLE GENERICS	EPINEPHRINE INJECTION	P042
W90WDF00398	6505010932384	ABBOTT LABORATORIES	EPINEPHRINE INJECTION	P042
W90WDF01178	685000F009059	UNITED STATES GYPSUM COMPANY	EPOXICAL RELEASE COMPOUND 16121	D001 D018
W90WDF00799	8040007386429	BONDED PRODUCTS INC.	EPOXY	NON-RCRA
W90WDF01231	803000EPOXY	MADEWELL PRODUCTS	EPOXY - 1103 SOLVENT FREE EPOXY AMINE COATING KIT	NON-RCRA
W90WDF00748	801000HARDNER	TECHNICAL INNOVATIONS	EPOXY - CR COATING 100C HARDNER	NON-RCRA
W90WDF00749	801000RESIN	TECHNICAL INNOVATIONS	EPOXY - CR COATING 100C RESIN	NON-RCRA
W90WDF01179	8030007838898	FLAMEMASTER CORP THE CHEM SEAL DIV	EPOXY - CS 1900 PART A & B	D001 D035
W90WDF00091	8030006708553	FLAMEMASTER CORP	EPOXY - CS 2725 PART B	NON-RCRA
W90WDF00112	8030006850915	FLAMEMASTER CORP	EPOXY - CS 3204 PART A	NON-RCRA
W90WDF00251	8030007534597	FLAMEMASTER CORP	EPOXY - CS 3204 PART A & B	NON-RCRA
W90WDF01056	8040001817188	DOW CHEMICAL	EPOXY - D.E.H. 52	NON-RCRA
W90WDF00722	8030013149359	CIBA SPECIALTY CHEM	EPOXY - EPOCAST 167 PART A	NON-RCRA
W90WDF00615	7930009353794	CIBA-GEIGY CORP FURANE PROD	EPOXY - EPOCAST 167 PART B	NON-RCRA
W90WDF00909	804000N041931	CIBA-GEIGY CORP (BSVBW)	EPOXY - EPOCAST 169 PART A, FPC 2114	NON-RCRA
W90WDF00097	8040008226430	SHELL OIL	EPOXY - EPON RESIN 828	NON-RCRA
W90WDF00642	8040000922816	HARDMAN INC	EPOXY - EPONWELD 8173 PART A	NON-RCRA
W90WDF00212	8040011633481	DEXTER ADHESIVES	EPOXY - HYSOL EA 9309.2 PART A	NON-RCRA
W90WDF00831	8040011633481	DEXTER AEROSPACE	EPOXY - HYSOL EA 9309.3 NA KIT (READY MIX)	NON RCRA
W90WDF00365	8040011633481	DEXTER ADHESIVES	EPOXY - HYSOL EA 9309.3 NA PART A	NON-RCRA
W90WDF00281	8040011633481	DEXTER ADHESIVES	EPOXY - HYSOL EA 9309.3 PART B	NON-RCRA
W90WDF00265	804000F041275	DEXTER ADHESIVES	EPOXY - HYSOL EA 9313 PART A	NON-RCRA
W90WDF00370	8040011074000	DEXTER ADHESIVES	EPOXY - HYSOL EA 9313 PART B	NON-RCRA
W90WDF00399	8040010899073	DEXTER ADHESIVES	EPOXY - HYSOL EA 9330 PART A	NON-RCRA
W90WDF00359	8040010899073	DEXTER ADHESIVES	EPOXY - HYSOL EA 9330 PART B	NON-RCRA
W90WDF00367	8040001520023	DEXTER ADHESIVES	EPOXY - HYSOL EA 934 PART B	NON-RCRA



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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00266	8040001520023	DEXTER ADHESIVES	EPOXY - HYSOL EA 934NA PART A	NON-RCRA
W90WDF00452	8040000168662	DEXTER ADHESIVES	EPOXY - HYSOL EA 934NA PART B	NON-RCRA
W90WDF00213	80400004637042	DEXTER ADHESIVE	EPOXY - HYSOL EA 956 PART A	NON-RCRA
W90WDF00368	80400004637042	DEXTER ADHESIVES	EPOXY - HYSOL EA 956 PART A	NON-RCRA
W90WDF00236	80400004637042	DEXTER ADHESIVES	EPOXY - HYSOL EA 956 PART B	NON-RCRA
W90WDF00360	8040012086003	DEXTER ADHESIVES	EPOXY - HYSOL EA 960F PART A	NON-RCRA
W90WDF01044	8040011074000	DEXTER AEROSPACE	EPOXY - HYSOL EA9313 KIT	NON-RCRA
W90WDF00369	8040012086003	DEXTER ADHESIVES	EPOXY - HYSOL EA960F PART B	NON-RCRA
W90WDF00361	8040012027202	DEXTER ADHESIVES	EPOXY - HYSOL NA 9309.3 PART B	NON-RCRA
W90WDF01349	5970012230782	DEXTER ELECTRONIC	EPOXY - HYSOL PC 18M	D001
W90WDF00817	8030002918380	MORTON INTERNATIONAL	EPOXY - MC 215 ACCELERATOR	NON RCRA
W90WDF00818	8030002918380	MORTON INTERNATIONAL	EPOXY - MC 215 BASE	NON RCRA
W90WDF00973	80300006169191	MORTON INTERNATIONAL	EPOXY - MC 236 KIT	NON-RCRA
W90WDF00090	8030011045396	MORTON INTERNATIONAL	EPOXY - MC 615 ACCELERATOR	NON-RCRA
W90WDF00096	8030006169191	ADVANCED CHEMISTRY	EPOXY - MC 615 BASE	D007
W90WDF00089	8030007232746	MORTON INTERNATIONAL	EPOXY - MC/AC 236 ACCELERATOR	NON-RCRA
W90WDF00764	8010001429279	KOPCOAT	EPOXY - PRIMER COATING, POLYIMIDE PART A	D001 D035
W90WDF00113	8010000822450	DEFT INC.	EPOXY - PRIMER EPOXY COATING POLYIMIDE COMPONENT A	D001 D035
W90WDF01187	8030000RESIN	SEM PRODUCTS	EPOXY - UNIVERSAL RESIN PART A	NON-RCRA
W90WDF00948	8040009447292	DYNAMOLD SOLVENTS	EPOXY ADHESIVE KIT PART A AND B	NON-RCRA
W90WDF00836	8040009447292	DYNAMOLD SOLVENTS	EPOXY ADHESIVE PART A	NON RCRA
W90WDF00837	8040009447292	DYNAMOLD SOLVENTS	EPOXY ADHESIVE PART B	NON RCRA
W90WDF01039	8010014191142	CRAWFORD LABS	EPOXY COATING BLACK PART A	D001 D035
W90WDF01107	8010014191142	CRAWFORD LABORATORIES	EPOXY COATING KIT 37038 PART A AND B	D001 D035
W90WDF00805	8010014191167	CRAWFORD LAB	EPOXY COATING KIT PART A	D001 D035
W90WDF00806	8010014191167	CRAWFORD LAB	EPOXY COATING KIT PART B	D001 D035
W90WDF00554	8010013635974	AMERON INC	EPOXY COATING KIT(CURING AGENT)	D001
W90WDF00970	804000EPOXY	PPG INDUSTRIES	EPOXY COATING KIT(EPX-900 AND EPX-901)	D001 D035
W90WDF00421	8010014191151	CRAWFORD LABORATORIES	EPOXY COATING KIT, GREEN 34088 ACTIVATOR	D001 D035
W90WDF01097	8010013137292	CRAWFORD LABORATORIES	EPOXY COATING PART A	D035
W90WDF01529	8010014166657	DEFT CHEMICAL	EPOXY COATING PART A & B	D001 D007
W90WDF01316	8030002261129	PRODUCTS RESEARCH & CHEM	EPOXY- COURTAULDS	D035
W90WDF01527	801000COATING	MARTIN SENOUR PAINTS	EPOXY FLOOR COATING PART A & B	NON-RCRA
W90WDF00640	2090003726064	BONDED PRODUCTS	EPOXY HARDENER PART B	NON-RCRA
W90WDF01483	8010012853046	DEFT INC. CHEMICAL COATING	EPOXY PAINT KIT (COMPONENTS A & B)	D001
W90WDF00765	8010001429279	KOP-COAT	EPOXY PRIMER COATING	D001
W90WDF00823	8010013162552	COURTAULDS AEROSPACE	EPOXY PRIMER COATING KIT	D001 D035
W90WDF01034	8010010504082	PRC DESOTO	EPOXY PRIMER COATING KIT(PRIMER AND ACTIVATOR)	D035
W90WDF00168	8010000822450	DEFT INC.	EPOXY PRIMER COATING, COMPONENT B	D001
W90WDF00793	8010000HMC0063	SHERWIN WILLIAMS	EPOXY PRIMER COMP B	D001



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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00794	801000HMC0063	SHERWIN WILLIAMS	EPOXY PRIMER-BASE COATING COMP A	D001 D035
W90WDF00997	8010010607176	DELTA PLASTICS	EPOXY REPAIR KIT	NON-RCRA
W90WDF00007	8040007263567	BONDED PRODUCTS	EPOXY REPAIR KIT PART A	NON-RCRA
W90WDF00413	8010010607176	DELTA PLASTICS	EPOXY REPAIR KIT R11 RESIN	NON-RCRA
W90WDF00006	8040007263567	BONDED PRODUCTS	EPOXY REPAIR KT, PART B	NON-RCRA
W90WDF01326	681000CLEANER	DRUMMOND AMERICAN	ERUSTOR	D002
W90WDF00536	681000ETHANOL	THOMAS SCIENTIFIC	ETHANOL	.
W90WDF00341	ACETATE	MALLINCKRODT BAKER	ETHYL ACETATE	D001 U112
W90WDF00180	6810002423645	AAPER ALCOHOL & CHEMICAL	ETHYL ALCOHOL USP- 200 PROOF	D001
W90WDF00204	6505011103955	GEBAUER CO	ETHYL CHLORIDE	D001
W90WDF00573	681000SPRAY	GEBAUER CO	ETHYL CHLORIDE SPRAY	D001
W90WDF00427	8040001429193	CHEMENCE INC	ETHYL CYANOACRYLATE	NON-RCRA
W90WDF01233	6810001001878	FISHER SCIENTIFIC	ETHYL ETHER	D001
W90WDF00193	6505001538379	HENRY SCHEIN INC	EUGENOL	NON-RCRA
W90WDF01245	681000CHEMICAL	AMERICAN MASTERTECH SCIENTIFIC INC.	EXCELL PLUS	NON-RCRA
W90WDF00898	13050050CALRDS	DOL ASP	EXPENDED CTG 50 CAL RANGE RESIDUE (A602)	D008
W90WDF00809	8030004081137	ORGANIC PRODUCTS	F-900 TORQUE SEAL	D001
W90WDF01019	8030006644944	MIDLAND CHICAGO CORP	FABRIC WATER REPELLANT	D001
W90WDF00231	6505011665099	MALLINCKRODT BAKER	FERRIC SUBSULFATE SOLUTION	NON-RCRA
W90WDF00791	871000FERTILIZER	PBI GORDON CORP	FERROMEC AC LIQUID IRON 15-0-0	D002
W90WDF00604	561000N061178	GARDNER ASPHALT	FIBRED ALUMINUM ROOF COATING, 622	D001
W90WDF01184	7930011838585	MASURY COLUMBIA	FINISH, FLOOR, NONBUFFING	NON-RCRA
W90WDF01071	803000CAULK	3M	FIRE BARRIER CP-25 NO SAG CAULK	D001 D035
W90WDF00870	655000N044502	DEFENSE TECHNOLOGY CORP	FIRST DEFENSE	D001 D003
W90WDF00002	675000DEVELOPER	TEST RESULTS	FIXER AND DEVELOPER MIXED	D011
W90WDF01160	6525010960617	PICKER INTERNATIONAL	FIXER REPLENISHES 3-7-90 PART A AND B	NON-RCRA
W90WDF01004	R	KODAK	FIXER REPLENISHES, RP X-OMAT LO FIXER PART A&B	NON-RCRA
W90WDF00895	675000FIXER	KODAK	FIXER WITH HARDENER MIX	NON-RCRA
W90WDF00709	6750010228410	KODAK	FLEXICOLOR BLEACH C-41 PART C	NON-RCRA
W90WDF01383	793000N022739	CARROLL CO.	FLOOR FINISH	NON-RCRA
W90WDF00423	7930014181184	3M	FLOOR FINISH	NON-RCRA
W90WDF01362	7930000456923	ABSOLUTE MAINTENANCE SUPPLIES INC.	FLOOR POLISH REMOVER	D002
W90WDF00652	7930000456912	DIAMOND CHEMICAL	FLOOR POLISH REMOVER	NON-RCRA
W90WDF00653	7930001415888	HILLYARD	FLOOR WAX	NON-RCRA
W90WDF00050	624000LAMP	GENERAL ELECTRIC	FLOURESCENT LAMP	WASTE
W90WDF00531	681000FLOURIDE	HACH COMPANY	FLOURIDE STANDARD SOLUTION	NON-RCRA
W90WDF00541	681000FLOURIDE	HACH CO	FLOURIDE STANDARD SOLUTION 10MG	NON-RCRA
W90WDF00535	681000N056520	HACH CO	FLUORIDE BUFFER	NON-RCRA
W90WDF00202	650500MEDICAL	GEBAUER CO	FLURO ETHYL	D001
W90WDF01355	343900FLUX	SUPERIOR FLUX	FLUX WELDING, SUPERIOR NO. 1225	D002

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00774	685000D020032	FINE ORGANICS	FO 02101 NV ALKILINE CLEANER	NON-RCRA
W90WDF01283	685000N010993	NATIONAL STARCH AND CHEM CORP	FORMALDEHYDE SOLUTION 37%(15% METHANOL)	D001 D043
W90WDF00539	681000FORMAZIN	HACH CO	FORMAZIN STANDARD	NON-RCRA
W90WDF01170	793000N010038	STATE CHEMICAL	FORMULA S-800 SEWER SOLVENT	NON-RCRA
W90WDF01236	6850012674345	MET-L-CHEK	FP-95A(M) FLOURESCENT PENETRANCT INSPECTION AEROSOL	D001 D003
W90WDF01486	6850001674701	E.I. DUPONT DE NEMOURS & COMPANY	FREON TF	NON-RCRA
W90WDF01209	681000FREON	TEXWIPE	FREON TP-35	NON-RCRA
W90WDF00450	6850008237861	SPRAY PRODUCTS	FUEL ENGINE PRIMER	D001 D003
W90WDF00522	913000FILTER	ACCUMULATION	FUEL FILTERS W/JP8WET	D001 D018
W90WDF01514	9110002639865	VAN BEN INDUSTRIES INC.	FUEL, COMPRESSED, TRIOXANE RATION HEATING	D001
W90WDF01501	685000FERTILIZER	GREEN LIGHT	FUNG-AWAY FUNGICIDE	NON-RCRA
W90WDF00655	7930002667121	BARTLETT CHEMICAL	FURNITURE POLISH	NON-RCRA
W90WDF00500	6850008807616	GENERAL ELECTRIC	G 624 SILICONE COMPOUND	NON-RCRA
W90WDF00053	6850008807616	GENERAL ELECTRIC	G 624 SILICONE COMPOUND	NON-RCRA
W90WDF00502	675000F021937	AGFA CORPORATION	G-353 C FIXER PART A	NON-RCRA
W90WDF00504	675000F021937	AGFA CORPORATION	G-353C PART B	NON-RCRA
W90WDF00697	793000F001492	DOALL CO.	GAGE BLOCK CLEANER	D001
W90WDF00698	793000F001492	DOALL CO.	GAGE BLOCK PRESERVATIVE	D001
W90WDF00694	8040010682423	3M	GASKET - RUBBER/GASKET SCOTCH GRIP 2141	D001
W90WDF00843	804000SILICONE	PERMATEX INDUSTRIAL	GASKET - AERESOL SILICONE GASKET MAKER RED	D001 D003
W90WDF00878	803000SEALANT	PERMATEX	GASKET - AEROSOL COPPER SPRAY A GASKET SEALANT	D001 D003
W90WDF00844	803000AEROSOL	PERMATEX INDUSTRIAL	GASKET - AEROSOL RIGHT STUFF GASKET MAKER BLACK	D001 D003
W90WDF00984	803000N054939	BEECHHAM HOME IMPROV PROD	GASKET - RTV BLUE SILICONE MAKE-A-GASKET 79260	D001 D003
W90WDF00425	9320012633620	DOW CORNING	GASKET - RTV GASKET MAKER AND SEALER	NON-RCRA
W90WDF00520	80300066561426	STEVEN INDUSTRIES	GASKET - SEALING COMPOUND, GASKET	D001
W90WDF01046	801000N011009	BOWMAN DIV BARNES GROUP	GASKET DECAL & PAINT REMOVER 19475(AEROSOL)	D001 D003
W90WDF00918	803000N092757	LOCTITE CORP	GASKET SEALANT	NON-RCRA
W90WDF00855	8030002523391	CHEMENCE INC	GASKET SEALANT - SEALING COMPOUND	D001
W90WDF00926	5330001336237	CUMMINGS ENGINE CO.	GASKET, ASBESTOS CONTAINING	NON RCRA
W90WDF01330	655000153-9968	POLYSCIENCES, INC.	GIEMSA'S STAINING SOLUTION	D001
W90WDF00556	6810002222634	EASTMAN KODAK	GLACIAL ACETIC ACID	U240
W90WDF01239	8030007535012	ATLAS PUTTY PRODUCT	GLAZING PUTTY	NON-RCRA
W90WDF01127	681000F037358	ELECTRON MICROSCOPY	GLUTARALDEHYDE 25%	NON-RCRA
W90WDF00297	6810013594919	BARTLETT CHEMICALS	GLYCEROL, TECHNICAL	NON-RCRA
W90WDF01342	8040002213813	RALRUBE	GLYPTAL 1297	D001 D035
W90WDF00667	6550CRYSTAL	BD BIOSCIENCES	GRAM CRYSTAL VIOLET	NON RCRA
W90WDF00380	6550011134259	BD BIOSCIENCES	GRAM CRYSTAL VIOLET	NON-RCRA
W90WDF00383	6810001169046	BD BIOSCIENCES	GRAM DECOLORIZER	D001
W90WDF00681	6550DECOLORIZER	BECTON DICKINSON	GRAM DECOLORIZER	D001
W90WDF00668	6550IODINE	BD BIOSCIENCES	GRAM IODINE	NON RCRA

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00379	655001134658	BD BIOSCIENCES	GRAM IODINE	NON-RCRA
W90WDF00685	6550SAFFARIN	BECTION DICKINSON BIOSCIENCES	GRAM SAFRANIN	D001
W90WDF00378	655001??4620	BD BIOSCIENCES	GRAM SAFRANIN	D001
W90WDF00306	9150001414481	E/M CORP	GREASE	NON-RCRA
W90WDF00431	9150009355851	SHELL OIL	GREASE AIRCRAFT	NON-RCRA
W90WDF00116	9150011977693	SUMMIT LUBRICANTS	GREASE AUTOMOTIVE ARTILLERY	NON-RCRA
W90WDF00074	9150011977689	SOUTHWEST PETRO	GREASE AUTOMOTIVE ARTILLERY	NON-RCRA
W90WDF00477	9150011977692	EXXON	GREASE AUTOMOTIVE/ARTILLERY	NON-RCRA
W90WDF00478	9150011977692	EXXON	GREASE AUTOMOTIVE/ARTILLERY	NON-RCRA
W90WDF00518	9150006631770	ROYAL LUBRICANTS	GREASE GENERAL PURPOSE ROYCO 27	NON-RCRA
W90WDF00461	7930013837926	KNIGHT MARKETING COMPANY	GREEZ OFF	D002
W90WDF00713	614000N043124	DOUGLAS BATTERY MFG CO	GUARDIAN LEAD ACID BATTERY	WASTE
W90WDF00103	801000N042551	JASCO CHEMICAL	GUM TURPENTINE	
W90WDF00412	8010010607176	DELTA PLASTICS INC	HARDENER HP-19	NON-RCRA
W90WDF00710	6850011675320	HEXAGON CHEMICAL COMPANY	HEXAFLOC M-20 COAGULANT WATER TREATMENT	NON-RCRA
W90WDF00893	681000CHEMICAL	LABORATORY	HEXANE, METHANOL, ACETONE LIQUID MIX	D001
W90WDF01214	6505010538620	ZENECA PHARMACEUTICALS	HIBICLENS SURGICAL DISINFECTANT	NON-RCRA
W90WDF01027	8030012950749	3M	COMPOUND	NON-RCRA
W90WDF01398	804000ADHESIVE	SHERWIN WILLIAMS	HIGH SOLIDS ENAMEL HARDER PART B	D001
W90WDF00590	6750010577994	EASTMAN KODAK	HOBBY-PAC BLEACH PART 2B	D002
W90WDF00592	6750010577994	EASTMAN KODAK	HOBBY-PAC COLOR NEGATIVE BLEACH PART 2A	D002
W90WDF00585	6750010577994	EASTMAN KODAK	HOBBY-PAC COLOR NEGATIVE DEVELOPER	NON-RCRA
W90WDF00584	6750010577994	KODAK	HOBBY-PAC COLOR NEGATIVE DEVELOPER PART 1A	NON-RCRA
W90WDF00583	6750010577994	KODAK	HOBBY-PAC COLOR NEGATIVE DEVELOPER PART 1C	NON-RCRA
W90WDF00650	6750011691851	KODAK	HOBBY-PAC COLOR SLIDE BLEACH FIX A	NON-RCRA
W90WDF00588	6750011691851	KODAK	HOBBY-PAC COLOR SLIDE KIT 1ST DEVELOPER	NON-RCRA
W90WDF00558	6750011691851	EASTMAN KODAK	HOBBY-PAC COLOR SLIDE KIT DEVELOPER PART A	D002
W90WDF00562	6750011691851	KODAK	HOBBY-PAC COLOR SLIDE KIT DEVELOPER PART B	NON-RCRA
W90WDF00511	793000CLEANER	HOPPE'S	HOPPE'S BENCHREST-9 METAL CLEANER	D001
W90WDF01050	793000WASHER	TCLP DOL REBUILD	HOTS PARTS WASHER SLUDGE	D008
W90WDF00567	685000F013641	OLIN CORP	HTH CONCENTRATED SPA AND HOT TUB CHLORINATING	D001
W90WDF00048	681000000ACID	REAGENT CHEMICAL & RESEARCH	HYDROCHLORIC ACID	D002
W90WDF01085	6550011621247	FISHER SCIENTIFIC	HYDROCHLORIC ACID .01-2.0N	D002
W90WDF01457	681000PEROXIDE	FISHER SCIENTIFIC	HYDROGEN PEROXIDE	NON-RCRA
W90WDF00935	AGENT	KODAK	HYPO CLEARING AGENT (CONCENTRATE)	NON-RCRA
W90WDF00285	AGENT	KODAK	HYPOCLEARING AGENT(WORKING SOLUTION)	NON-RCRA
W90WDF01270	8040013556366	DEXTER	HYSOL EA 9203 PRIMER	D001
W90WDF01298	1375014151235	ACCUM DRUM	IGNITER, TIME BLASTING FUSE (EXPENDED)	D006
W90WDF00382	6640002999807	RP CARGILLE LABORATORIES	IMMERSION OIL TYPES A&B CODE 1248, 16482 & 16484	NON-RCRA
W90WDF00228	137700F023479	PASLODE CORP.	IMPULSE FUEL CELL	D001

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00246	6750014186801	KODAK	INDICATOR STOP BATH	D001 D002
W90WDF00936	BATH	KODAK	INDICATOR STOP BATH (CONCENTRATE)	D001 D002
W90WDF00284	675000INDICATOR	KODAK	INDICATOR STOP BATH(WORKING SOLUTION)	NON-RCRA
W90WDF00671	6810INDOLE	DADE MICROSCAN	INDOLE	NON RCRA
W90WDF00639	8030001806339	INLAND PACKAGING	INNERBOND C-910 CAULKING COMPOUND	NON-RCRA
W90WDF00470	8030008718489	PRC-DESOTO	INORGANIC DICHROMATE SOLUTION	NON-RCRA
W90WDF00862	6840007534963	AIROSOL COMPANY INC.	INSECT REPELLANT	D001
W90WDF00443	6840012781336	COULSTON INTERNATIONAL	INSECT REPELLANT CLOTHING APPLICATION	NON-RCRA
W90WDF00426	6840013450237	HILTON HEAD LABORATORIES	INSECT REPELLANT CLOTHING APPLICATION KIT	D001
W90WDF01361	6840012781336	COULSTON INTL CORP	INSECT REPELLANT, CLOTHING APPLICATION (AEROSOL)	D003
W90WDF00956	6840012843982	3M	INSECT/ARTHROPOD REPELLANT LOTION	NON-RCRA
W90WDF00523	684000INSECTICIDE	TEST RESULTS	INSECTICIDE (FROM 8300 BLOCK)	D040
W90WDF00439	6840001490106	CHEMSCOPE	INSECTICIDE RESMETHRIN	NON-RCRA
W90WDF00851	6850001450255	MAGNAFLUX CORP	INSPECTION PENETRANT KIT (MIL-I-25135E)	D001 D003
W90WDF01002	6850001450255	MAGNAFLUX CORP	INSPECTION PENTETRANT KIT (MIL-I-25135E)	D001 D003
W90WDF00165	5970001810190	CONAP INC.	INSULATING COMPOUND KIT(PART A AND PART B)	D001
W90WDF00902	685000F004179	WR GRACE/LAKE ZURICH	INTERFERENCE SUPPRESSOR	D002
W90WDF01454	681000IODINE	FISHER SCIENTIFIC	IODINE SOLUTIONS IN AND LUGOL S1102 500	D002
W90WDF00982	6810010294217	BRO TECH	ION EXCHANGE COMPOUND	NON-RCRA
W90WDF00071	681000HMC0009	HACH CO	IRON REAGENT, FERROVER	NON-RCRA
W90WDF00189	6505011179832	ANAQUEST DIVISION OF BOC INC	ISOFLURANE	NON-RCRA
W90WDF00211	6810009838551	HOME OIL	ISOPROPYL ALCOHOL	D001
W90WDF00684	6810013822904	SHELL OIL COMPANY	ISOPROYL ALCOHOL, TECHNICAL	D001
W90WDF00929	658000D007283	MOTOR CHEMICALS INC.	JETCO TIRE INFLATOR J-300 AND 305	D001 D003
W90WDF01371	803000COMPOUND	PRC DESOTO	JOINTING COMPOUND	D007
W90WDF00738	7930013146133	PENETONE CORP/WEST CHEM	JP8 MIXED WITH CITRIKLEEN HD	D001
W90WDF01323	681000MIXTURE	ATOTECH USA INC	KEMGLO FE-4L	NON-RCRA
W90WDF00632	871000HERBACIDE	KERB	KERB 50-W A HERBACIDE	U192
W90WDF00619	7930000STRIPPER	W.M. BARR & COMPANY INC.	KLEIN STRIP AIRCRAFT REMOVER	D001
W90WDF01435	6525010248877	KODAK	KODAK RAPID X-RAY DEVELOPER/REPLENISH 146 544, PT B	NON-RCRA
W90WDF00617	ER	KODAK	KODAK T-MAX 100 REDEVELOPER	NON RCRA
W90WDF00690	6550012382341	BLOMORIEUX INC	KOVACS REAGENT	D002
W90WDF00767	6550012382341	MICROSCAN	KOVACS REAGENT	D001 D002
W90WDF00669	6550012382341	DADE MICROSCAN	KOVACS REAGENT	NON RCRA
W90WDF01020	7510001610811	MARSH CO	K-TYPE STENCIL INK, BLACK	D001
W90WDF01225	6850000ASBESTOS	TEST RESULTS OVEN	LAB OVEN CONTAINING ASBESTOS	NON-RCRA
W90WDF00730	6240013086368	UVP	LAMP MERCURY VAPOR	WASTE
W90WDF01475	681000CLEANER	BETTER ENGINEERING MANUFACTURE	LDN-225 DEFOAMER LIQUID DETERGENT	NON-RCRA
W90WDF00465	614000N091496	CSB BATTERY	LEAD ACID BATTERY	WASTE
W90WDF00873	614000BATTERY	PANASONIC	LEAD ACID BATTERY	WASTE

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00901	614000N080573	DUAL LITE	LEAD ACID BATTERY	WASTE
W90WDF00274	614000BATTERY	PANASONIC	LEAD ACID BATTERY	WASTE
W90WDF00273	614000BATTERY	POWER-SONIC	LEAD ACID BATTERY	WASTE
W90WDF00777	614000BATTERY	MATSUSHITA	LEAD ACID BATTERY	WASTE
W90WDF01007	6140010514900	EXIDE	LEAD ACID BATTERY	WASTE
W90WDF00600	613500F034624	MATSUSHITA	LEAD ACID BATTERY	WASTE
W90WDF00033	614000D004506	PANASONIC	LEAD ACID BATTERY	WASTE
W90WDF00475	6140013018773	GATES ENERGY PRODUCTS	LEAD ACID BATTERY	WASTE
W90WDF00785	614000BATTERY	YUASA	LEAD ACID BATTERY	WASTE
W90WDF00786	614000BATTERY	POWER SONIC	LEAD ACID BATTERY	WASTE
W90WDF00787	614000BATTERY	HAWKER ENERGY	LEAD ACID BATTERY	WASTE
W90WDF00075	614000BATTERY	ACCESS BATTERY AND POWER	LEAD ACID BATTERY	WASTE
W90WDF00173	614000BATTERY	PANASONIC	LEAD ACID BATTERY	WASTE
W90WDF00025	614000BATTERY	YUASA	LEAD ACID BATTERY	WASTE
W90WDF01038	8030000592761	JET-LUBE	LEAD FREE ANTI-SEIZE LUBRICANT	NON-RCRA
W90WDF00327	681000SOLUTION	LAMOTTE CO	LEAD IN AIR ABSORBING SOLUTION	D002
W90WDF00533	681000SOLUTION	LAMOTTE CO	LEAD IN AIR ABSORBING SOLUTION	D002
W90WDF00550	681000REAGENT	LAMOTTE CO	LEAD REAGENT #1	D019
W90WDF00972	68500006211820	AERO-CHEM	LEAK TEST COMPOUND	NON-RCRA
W90WDF00509	68500009491397	ECOLAB INDUSTRIES	LIME-A-WAY	D002
W90WDF00661	6505003557035	BARRE-NATIONAL, INC.	LINDANE	D013 U129
W90WDF00196	6505002688574	BARRE-NATIONAL INC	LINDANE SHAMPOO	D001 D013
W90WDF00392	6505002688574	ALPHARMA	LINDANE SHAMPOO	D013 U129
W90WDF01153	80300008238039	TURCO PRODUCTS	LIQUID ACCELAGOLD, CORROSION RESISTANT COATING	D002 D007
W90WDF01035	803000ALODINE	LH AVIATION	LIQUID ALODINE	D007
W90WDF01261	685000COMPOUND	46TH ENG	LIQUID COMPOUND	D001
W90WDF01114	803000ANTISIEZE	ARMOR RESEARCH CO	LOCK-OUT ANIT-SIEZE COMPOUND	NON-RCRA
W90WDF00867	9150012602534	SANDSTROM PRODUCTS	LUBRICANT, SOILD FILM, 238 DFL AEROSOL	D035
W90WDF00865	9150009547422	E/M CORP.	LUBRICANT, SOLID FILM PERMA SILK G	D035
W90WDF00094	9150009490323	DEAN ROY PRODUCTS	LUBRICATING OIL	NON-RCRA
W90WDF00084	9150005437220	PROCESS RESEARCH PRODUCTS	LUBRICATING OIL, MOLYBDENUM DISULFIDE	NON-RCRA
W90WDF00323	9150009490323	CHEMICAL COMMODITIES AGENCY	LUBRICATING OIL, SEMIFLUID, MIL-L-41660	NON-RCRA
W90WDF00003	4240001655026	CALGON CARBON CORP.	M10A1 FILTER INSERT	D007 D011
W90WDF00057	4240001655026	CALGON CARBON CORP.	M-13A1 FILTER	D007 D011
W90WDF00922	4240001655026	DEMIL ITEM	M-13A2 FILTER	D007 D011
W90WDF01140	6665009034765	DEMIL	M15A2A DETECTOR KIT BLUE BAND TUBE	D009
W90WDF01141	6665009034765	DEMIL	M15A2A DETECTOR KIT BLUE TOP BOTTLE	D002
W90WDF01142	6665009034765	DEMIL	M15A2A DETECTOR KIT NON REGULATED ITEMS	NON-RCRA
W90WDF01139	6665009034765	DEMIL	M15A2A DETECTOR KIT SUBSTRATE DISPENSER	D001
W90WDF01067	42400008283952	DEMIL ITEM	M18 GAS FILTER	D007 D011

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF01157	4240010263112	DEMIL	M1A1-19 GAS PARTICULATE FILTER	NON-RCRA
W90WDF00324	6665010168399	DEMIL ITEM	M256 DETECTOR KIT	D009
W90WDF00800	6665011334964	ENVIRONMENT TECH GRP INC	M256A1 DETECTOR KIT	D009
W90WDF00009	4230011013984	BRUNSWICK CORP.	M258A1 DECONTAMINATION KIT PACKET 1	D001
W90WDF00010	4230011013984	BRUNSWICK CORP	M258A1 DECONTAMINATION KIT PACKET II	D001
W90WDF00967	6665011340885	TRUETECH DEMIL ITEM	M272 WATER TEST KIT NON HAZARDOUS PARTS	NON-RCRA
W90WDF00131	4230012761905	DEMIL ITEM	M291 DECONTAMINATION KIT	NON-RCRA
W90WDF01156	4240008533201	DEMIL	M2A2 GAS PARTICULATE FILTER	D007 D011
W90WDF00649	4240013631311	CHEMICAL DEFENSE EQUIPMENT	M48A1 GAS PARTICULATE FILTER	D011
W90WDF01155	4240002370227	DEMIL	M56 GAS PARTICULATE FILTER	D007 D011
W90WDF01252	6910001064800	CHEMTRONICS	M72A1 CHEMICAL IDENTIFICATION KIT	D002 D003
W90WDF00725	6910010432090	CHEMTRONICS	M72A2 TRAINING SET	D002 U103
W90WDF01516	804000ADHESIVE	BEACON CHEMICAL COMPANY INC.	MAGNA-TAC M024-11 (ADHESIVE PART 1 AND 2)	D001 D035
W90WDF01448	CHLOR HEX	FISHER SCIENTIFIC	MAGNESIUM CHLORIDE HEXAHYDRATE	NON-RCRA
W90WDF01444	HYDROXIDE	FISHER SCIENTIFIC	MAGNESIUM HYDROXIDE	NON-RCRA
W90WDF01446	SULFATE	FISHER SCIENTIFIC	MAGNESIUM SULFATE	NON-RCRA
W90WDF01367	6840006559222	CLARKE	MALATHION	NON-RCRA
W90WDF00406	6810010700714	INDUSTRIAL MUNICIPAL EQUIPMENT	MANGANESE SULFATE REAGENT #6209-18-4	NON-RCRA
W90WDF01459	681000SULFATE	FISHER SCIENTIFIC	MANGANOUS SULFATE SOLUTIONS	NON-RCRA
W90WDF00241	675000D004358	KODAK	MANUAL DEVELOPER/REPLENISHER PART A	NON-RCRA
W90WDF01291	683000D003384	AIRCO INC	MAPP GAS	D001
W90WDF01069	803000D003087	SELIG CHEMICAL	MASTER MECHANIC AEROSOL #350	D001 D003
W90WDF00741	684000N030712	PBI/GARDEN CORP	MECOMEC 4 TURF HERBICIDE	NON-RCRA
W90WDF01473	535000BLAST	DOL OGM	MEDIA BLAST	D006
W90WDF00958	535000BLAST	DOL REBUILD SHOP	MEDIA BLAST	D006
W90WDF00101	535000BLAST	TEST RESULTS	MEDIA BLAST	D006
W90WDF01018	BLAST	TEST RESULTS MATES	MEDIA BLAST	D008
W90WDF01405	682000INK	VANSON ROYAL DUTCH PRINTING INC.	MEGA-LASER BLACK (OFFSET INK OXIDIZING)	NON-RCRA
W90WDF01304	6810-00-281-2785	UNION CARBIDE	MEK	D001 D035
W90WDF01479	6850013620945	BARTLETT CHEMICALS	MEMBRANE CLEANER	D002
W90WDF00833	6550013146615	HACH	M-ENDO BROTH AMPULES	NON RCRA
W90WDF00776	6685008094989	FISHER SCIENTIFIC CHEMICAL DIV	MERCURY	D002 D009
W90WDF00338	6240013086368	FISHER SCIENTIFIC	MERCURY LAMP	WASTE
W90WDF00243	999900SPILL	SPILL CLEANUP	MERCURY SPILL CLEAN UP DEBRIS	D009
W90WDF00107	6685002457696	WEKSLEIR INSTRUMENTS	MERCURY-IN-GLASS THERMOMETER	D009
W90WDF00448	6810001857026	ABSOLUTE STANDARDS	METHANOL	D001
W90WDF00312	6810005973608	HOME OIL	METHANOL	D001 U154
W90WDF00292	681000METHANOL	POLYSCIENCES INC.	METHANOL	D001 U154
W90WDF00433	6810005973608	HOME OIL	METHANOL, TECHNICAL	D001 U154
W90WDF01312	6810002863785	CHEMSOLV INC.	METHYL ISOBUTYL KETONE	D001 U161

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00714	793000PENETRANT	MET-L-CHEK CO.	MET-L-CHEK VP-31A PENETRANT AEROSOL	NON-RCRA
W90WDF00989	6850008411347	MET-L-CHEK	MET-L-GLO 1400B INSPECTION COMPOUND	D001 D003
W90WDF00715	793000REMOVER	MET-L-CHEK CO.	MET-T-CHEK E-59 REMOVER, PENETRANT AEROSOL	NON-RCRA
W90WDF00828	655000MEDICAL	BJACH	MICROSCAN WASTE	D001
W90WDF00916	6810007534787	DADE BEHRING INC.	MICROSCAN XYLENE	D001 U239
W90WDF01248	655000MICROSCAN	DADE MICROSCAN	MICROSCAN ALPHA NAPHTHOL/KOVACS REAGENT MIX (BAGS)	D001 D002
W90WDF00899	7930000687858	ECOLAB	MIKROLENE DETERGENT	D002
W90WDF01234	685000N016922	ALLIED ENTERPRISES	MILDEW STAIN REMOVER	D001
W90WDF00863	6840002424217	OCTAGON PROCESS INC	MIL-I-11490E, INSECTICIDE, LINDANE 1% DUST	D013
W90WDF01535	8010011930517	NCP COATINGS INC	MIL-P-53033B TYPE I CATALYST EPOXY 05511CEH-X	D001
W90WDF01468	681000ACID	THE MIRACHEM CORP	MIRACHEM 250 (RUST AND SCALE REMOVER)	D002
W90WDF00726	683000CYLINDER	PURITAN-BENNETT CORP	MIXED GAS CYLINDERS (CO;HELIUM;NITROGEN;OXYGEN)	NON-RCRA
W90WDF00751	915000POL	ACCUM DRUM 8300	MIXED POL (SPRAY LUBRICANT, POL AND OTHER OIL)	D039 D040
W90WDF00802	915000POL	ACCUM POL 8300	MIXED POL (SPRAY, LUBRICANTS, POLS, AND OTHER OIL)	D039 D040
W90WDF00525	915000POL	TEST RESULTS	MIXED POL(8300 BLOCK PUNCTURE MACHINE)	D040
W90WDF00043	915000000POL	TEST RESULTS	MIXED POL(8300 BLOCK PUNCTURE MACHINE)	D040
W90WDF00416	8040001594846	UNKNOWN	MMM-A-134 PART A	NON-RCRA
W90WDF01180	3680002373457	RAM CHEMICAL	MOLDE RELEASE 225 AEROSOL	D001 D003
W90WDF00167	9150007542595	SHELL OIL	MOLYBDENUM DISULFIDE GREASE	NON-RCRA
W90WDF00217	9150007542595	ROYAL LUBRICANTS	MOLYBDENUM DISULFIDE GREASE	NON-RCRA
W90WDF00158	9150005437220	PROCESS RESEARCH	MOLYBDENUM DISULFIDE LUBRICANT	NON-RCRA
W90WDF00419	915000HMC0055	MARTECH SPECIALTIES	MT 600 PREMIUM GEAR AND BEARING GREASE	NON-RCRA
W90WDF00496	683000N024226	RONSON	MULTI FILLS BUTANE	D001 D003
W90WDF00486	681000N078847	ELF ATOCHEM	MURIATIC ACID	D002
W90WDF01381	652000F002889	AUSTENAL DENTAL, INC	MYERSON SPECIAL CROWN& BRIDGE MONOMER	D001
W90WDF01268	6810001237047	CHEMICAL COMMODITIES INC.	N-AMYL ACETATE	D001
W90WDF00317	6810011902725	FISHER SCIENTIFIC	N-AMYL ACETATE	D001
W90WDF00745	915000N082221	MACS OIL & CHEMICALS	NAPA PREMIUM STARTING FLUID 7216	D001
W90WDF00514	6810002388119	SPECTRUM CHEMICAL CO	NAPHTHA ALIPHATIC	D001 D018
W90WDF00790	424000FILTER	GERMAN	NBC FILTERS (GERMAN)	D007
W90WDF00058	681000N063856	OMNII/AJAX	NEUTRA ACID, ACID NEUTRALIZER	NON-RCRA
W90WDF00858	8030001050270	BOSTIK	NEVER-SEEZ PURE NICKEL ANTISEIZE COMPOUND	NON RCRA
W90WDF01423	6850014742317	ECOLINK INC	NEW II (MIL-PRF-680, TYPE II)	NON-RCRA
W90WDF00191	6505011885354	SMITHKLINE BEECHAM	NICORETTE	NON-RCRA
W90WDF00506	585501INTENSIFIER	DEMIL ITEM	NIGHT VISION INTENSIFIERS TUBES(2ND AND 3RD GENERATION)	D006 D008
W90WDF00339	681000NITRIC ACID	FISHER SCIENTIFIC	NITRIC ACID	D001 D002
W90WDF00761	6810002372918	MALLINCKRODT	NITRIC ACID	D002
W90WDF01242	681000SPILL	VAN WALTERS AND RODGERS INC	NITRIC ACID SPILL MEDIA	D002
W90WDF00944	871000FERTILIZER	SKLAR FERTILIZER CO. INC.	NITRO PLUS 25	NON-RCRA
W90WDF00333	681000NITROGEN	LAMOTTE CO	NITROGEN DIOXIDE #2	NON-RCRA



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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00332	681000NITROGEN	LAMOTTE CO	NITROGEN DIOXIDE #3	NON-RCRA
W90WDF00527	681000NITROGEN	LAMOTTE CO	NITROGEN DIOXIDE REAGENT #3	NON-RCRA
W90WDF00526	681000SOLUTION	LAMOTTE CO.	NITROGEN EXTRACTING SOLUTION	D002
W90WDF00127	6830001690794	LIQUID AIR CORP	NITROGEN GAS	NON-RCRA
W90WDF00546	681000NITROGEN	LAMOTTE CO	NITROGEN INDICATOR POWDER	NON-RCRA
W90WDF00205	650500MEDICAL	HOSPITAL PRODUCTS DIVISION	NITROGLYCERIN INJECTION	NON-RCRA
W90WDF00395	681000SOLUTION	MAJOR PHARMACEUTICALS	NITROGLYCERIN TRANSDERMAL SYSTEM	NON-RCRA
W90WDF00388	6505012403146	PARKE-DAVIS	NITROSTAT IV	NON-RCRA
W90WDF00687	655000N054665	BIOMERIEUX VITEK INC	N-N-DIMETHYE	D002
W90WDF01515	792000CLEANER	SCOT LABORTORIES	NON-BUTYL CONCRETE CLEANER	D002
W90WDF01257	8030002441296	DAUBERT CHEMICAL COMPANY	NOX RUST 503-LS	D001
W90WDF00915	8030002312353	DAUBERT CHEMICAL COMPANY	NOX RUST 509	NON-RCRA
W90WDF00513	8030009030931	DAUBERT CHEMICAL CO	NOX RUST CORROSION PREVENTIVE	D001
W90WDF00998	8030001489833	RALRUBE	NUTS N' BOLTS 427	NON-RCRA
W90WDF01503	6850013573564	ECOLAB INC	OASIS 144 SANITIZER CONCENTRATE	NON-RCRA
W90WDF00453	911000N017391	KINGSFORD	ODORLESS CHARCOAL LIGHTER	D001
W90WDF01534	8030002380512	MASTER PRODUCTS	OLD MASTERS PASTE WOOD FILLER	D001
W90WDF01517	801000PAINT	PPG INDUSTRIES	OMNI SLOW TOPCOAT HARDENER	D001
W90WDF00507	7930014181138	CHAMPION CHEMICAL	ONCE-A-YEAR FLOOR FINISH	NON-RCRA
W90WDF00859	7930014120535	WERTH SANITARY SUPPLY	ONE STROKE LAUNDRY DETERGENT	D002
W90WDF00963	6665011340885	TRUETECH DEMIL ITEM	ORANGE BAND SIMULANT TUBE(M272 KIT)	D004
W90WDF01093	801000PAINT	DOL	ORGANIC LIQUID	D040
W90WDF00768	655000N021034	CALGON VESTAL LAB	ORGANIC PHOSPHOROUS REAGENT	D002
W90WDF00159	9150002698255	DOW CORNING	O-RING LUBRICANT	NON-RCRA
W90WDF01329	729000CARPET	CHEM	OUTDOOR CARPET CONTAINING CARC PAINT	D005 D007
W90WDF01288	343900D007486	UNION CARBIDE CORP	OXYGEN	D001
W90WDF00572	683000CYLINDER	DPW	OXYGEN	D001
W90WDF01287	6505001325199	AIR LIQUIDE	OXYGEN	D001
W90WDF01286	6505009652439	ALLIED HEALTHCARE PRODUCTS	OXYGEN	D001
W90WDF00954	KIT	ILFORD	P-12 PHOTOGRAPHIC CHEMISTRY KIT(CIBACHROME)	NON-RCRA
W90WDF00706	3439002554566	L.B. ALLEN COMPANY INC.	P-200 SOLDER PASTE	NON-RCRA
W90WDF01310	685000REMOVER	ADVANCE FORMULAS	PAINT AND VARNISH REMOVER	D003
W90WDF00442	801000PAINT	TEST RESULTS	PAINT CHIPS FROM DPW ROADS AND GROUNDS	D008
W90WDF01537	8010005152258	CREST INDUSTRIAL CHEMICALS	PAINT STRIPPER	
W90WDF00736	804000ADHESIVE	DAP INC	PANEL AND FOAMBOARD ADHESIVE	D001
W90WDF00727	6550PARAPAK	MERIDIAN DIAGNOSTIC	PARA PAK BUFFERED LV-PVA	D001 D009
W90WDF01396	804000F019930	PARA-CHEM SOUTHERN INC.	PARABOND C-70	D001 D035
W90WDF00857	804000F019932	PARA-CHEM SOUTHERN	PARABOND P-28 CLEAR	D001 D035
W90WDF00729	655000BUFFERED	MERIDIAN DIAGNOSTICS INC	PARA-PAK BUFFERED 10%FORMALIN FIXTURE	NON RCRA
W90WDF00389	681000FIXATIVE	MERIDIAN DIAGNOSTICS	PARA-PAK LV-PVA FIXATIVE	D001 D009



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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00316	7930014120978	ZEP	PART WASHER DEGREASER	D008
W90WDF01116	685000F007537	REXCO CHEMICAL	PARTALL FILM NO.10 LIQUID PARTING FILM	D001
W90WDF01493	601000SOLVENT	DMWR	PARTS BATH SOLVENT (CAUSTIC SODA)	D002 D008
W90WDF01147	681000SOLVENT	RANGE CONTROL	PARTS WASHER CLEANING SOLVENT	D001
W90WDF01183	664000SOLVENT	DPW ROAD & GROUNDS	PARTS WASHER SOLVENT	D010
W90WDF00980	6850012513289	PRC-DESOTO	PASA JELL 107 222559	D002 D007
W90WDF00183	6550013585386	ORGANON TEKNIKA	PEDI-BACT CULTURE BOTTLES	NON-RCRA
W90WDF00733	6515-00-KIT	ASTRO-MED INC.	PEN FLUSHING KIT	NON-RCRA
W90WDF01045	9150005297518	AMERICAN WRITING INK	PENETRATING OIL TYPE II AEROSOL	D001 D003
W90WDF00829	7930002674928	INDUSTRIAL FLOOR FINISHES	PERMAKOTEWAX, FLOOR	D001
W90WDF01102	6840013342866	ROUSSEL BIO CORP	PERMANONE 40 INSECT REPELLANT CLOTHING APPLICATION	D001
W90WDF01313	9150013804470	E/M CORP SUB OF GREAT LAKES	PERMA-SILK RAC 10-137	D001 D003
W90WDF00114	803000CORROSION	E/M	PERMA-SLIK G AEROSOL (SOLID FILM LUBRICANT)	D035
W90WDF00969	6810001746599	FISHER SCIENTIFIC	PETROLEUM ETHER	D001
W90WDF00141	7930013282030	P-T TECHNOLOGIES	PF DEGREASER SOLVENT	NON-RCRA
W90WDF00534	681000INDICATOR	LAMOTTE CO	PH INDICATOR	NON-RCRA
W90WDF01195	6810000872340	HF SCIENTIFIC	PH INDICATOR SOLUTION	D001
W90WDF00072	685000REAGENT	HACH CO	PHOSPHATE REAGENT POWDER PILLOWS(PACKETS)	NON-RCRA
W90WDF01461	681000ACID	681000ACID	PHOSPHORIC ACID	D002
W90WDF00549	OUS	LAMOTTE CO	PHOSPHOROUS EXTRACTING SOLUTION	NON-RCRA
W90WDF00547	OUS	LAMOTTE CO	PHOSPHOROUS INDICATOR SOLUTION	NON-RCRA
W90WDF00238	6750001657133	KODAK	PHOTO DEVELOPER/REPLENISHER PART A	NON-RCRA
W90WDF00240	6750012851764	KODAK	PHOTO DEVELOPER/REPLENISHER PART C	NON-RCRA
W90WDF01320	674000PHOTO	DPTMS ARTS AND CRAFT	PHOTO DEVELOPING EQUIPMENT	D008 D028
W90WDF00627	675000PHOTO FLO	KODAK	PHOTO-FLO 200 SOLUTION	NON-RCRA
W90WDF00633	6750010228410	KODAK	PHOTOGRAPHIC BLEACH	NON-RCRA
W90WDF00239	6750000093580	EASTMAN KODAK	PHOTOGRAPHIC LIQUID DEVELOPER/REPLENISHER	D002
W90WDF00247	6750007271063	KODAK	PHOTOGRAPHIC RAPID FIXER PART B	D002
W90WDF01244	6140-00BATTERY	MEDTRONIC	PHYSIO CONTROL LEAD ACID BATTERY	WASTE
W90WDF00975	681000N025949	PDI INC.	PLASTI DIP	D001
W90WDF00078	7930009353794	RALKEM INC.	PLASTIC POLISH, LIQUID PP560 B	D001
W90WDF01049	939000N044503	PND CORP	PLUG N DIKE SEALANT	NON-RCRA
W90WDF01266	803000SEALANT	INSTA FOAM PRODUCT CO.	POLY SEALANT COMPONENT B	NON-RCRA
W90WDF00286	675000DEVELOPER	KODAK	POLYMAX T DEVELOPER(WORKING SOLUTION)	NON-RCRA
W90WDF00630	6750014280393	KODAK	POLYMAX T FIXER	NON-RCRA
W90WDF00142	8040001487183	EMERSON AND CUMING SPECIALTY	POLYMER CATALYST 15 BLACK	NON-RCRA
W90WDF01265	803000SEALANT	INSTA FOAM PRODUCTS CO.	POLYSEALANT COMPONENT A	NON-RCRA
W90WDF01369	8030014500381	PRC-DESOTO	POLYSULFIDE RUBBER COMPOUND	D001
W90WDF00466	8030008718489	PRC DESOTO INTERNATIONAL	POLYSULFIDE RUBBER SOLUTION PART B	D001 D007
W90WDF01496	8010013296752	DEFT INC	POLYURETHANE COATING	D001 D035

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00410	8030004985268	SEAGRAVE COATINGS	POLYURETHANE COATING(PAINT RELATED MATERIAL)	D001 D035
W90WDF01513	8010012853046	DEFT	POLYURETHANE COATING, LIGHT GRAY 16440(PART 1 AND 2)	D001
W90WDF01331	803000SEALER	3M	POLYURETHANE PROTECTIVE TAPE ADHESIVE PROMOTER #86	D001
W90WDF00178	681000TABLETS	WISCONSIN PHARMACAL CO	POTABLE AQUA(WATER PURIFICATION TABLET, IODINE)	NON-RCRA
W90WDF01202	CHLORATE	SPECTRUM CHEMICAL	POTASSIUM CHLORATE	D001
W90WDF01447	CHLORIDE	J.T. BAKER	POTASSIUM CHLORIDE	NON-RCRA
W90WDF01162	6810002002574	FISHER SCIENTIFIC	POTASSIUM CHLORIDE	NON-RCRA
W90WDF00548	681000POTASSIUM	LAMOTTE CO	POTASSIUM EXTRACTING SOLUTION	NON-RCRA
W90WDF01161	6810002758134	FISHER SCIENTIFIC	POTASSIUM HYDROGEN PHTHALATE	NON-RCRA
W90WDF00545	6810010701847	HACH CO	POTASSIUM HYDROXIDE SOLUTION	D002
W90WDF00559	6550011536987	BIOMERIEUX VITEK INC	POTASSIUM HYDROXIDE SOLUTION	D002
W90WDF00680	6550011536987	BIOMERIEUX VITEK	POTASSIUM HYDROXIDE SOLUTION	NON-RCRA
W90WDF00621	681000IODINE	INTEGRA CHEMICAL	POTASSIUM IODINE	NON RCRA
W90WDF01439	NITRATE	MALLINCKRODT/JT BAKER	POTASSIUM NITRATE	D001
W90WDF01451	681000POTASSIUM	FISHER SCIENTIFIC	POTASSIUM PHOSPHATE, MONOBASIC	NON-RCRA
W90WDF00210	681000F027576	HACH CO	POURRITE M-ENDO BROTH AMPULES	NON-RCRA
W90WDF00262	6505001487096	CLAY PARK LABORATORIES	POVIDONE IODINE OINTMENT	NON-RCRA
W90WDF00260	6510010100307	CLINIPAD CORP	POVIDONE IODOPHOR POVIDONE IODINE SOLUTION	NON-RCRA
W90WDF01466	793000CLEANER	STAR BRONZE CO.	POWER CLEAN LIQUID	D002
W90WDF01309	8030000087203	COURTAULDS AEROSPACE	PR1436G SPRAYABLE KIT	D001 D007
W90WDF00744	8030007535004	COURTAULDS AEROSPACE	PR-1440 B 1/2 ACCELERATOR SEALING COMPOUND	NON-RCRA
W90WDF00093	8030007232746	COURTAULDS AEROSPACE	PR-1440 B-2(AC236/MC236) BASE SEALING COMPOUND	NON-RCRA
W90WDF01360	803000COMPOUND	PRC-DESOTO	PR-1592 BLACK, PART A	NON-RCRA
W90WDF01012	8030013647364	COURTAULDS AEROSPACE	PR-1775 SEALING COMPOUND PART B	D035
W90WDF01052	804000ADHESIVE	PRC DESTO	PR-850 PEDESTAL SEALING COMPOUND KIT	NON-RCRA
W90WDF01281	6505011253248	SURVIVAL TECHNOLOGY INC.	PRALIDOXIME CHLORIDE AUTO INJECTOR	NON-RCRA
W90WDF01077	801000N060432	JASCO CHEMICAL	PREP AND PRIMER 717	D002 D007
W90WDF00849	8030008418386	EVERSEAL	PRESERVATIVE COATING, CANVAS	D001
W90WDF00445	8030002812346	MIDLAND CHICAGO CORP.	PRESERVATIVE COATING, CANVAS, OLIVE DRAB34088	D001
W90WDF01335	6850-00D020141	FIRST BRANDS CORP	PRESTONE DE-ICER AS242,AS240(AEROSOL)	D001 D003
W90WDF00795	8030002812726	PRATT & LAMBERT	PRIMER WASH PRETREAT FORM 117 FOR METALS	D001
W90WDF00570	683000CYLINDER	PRIMUS	PRIMUS BUTANE/PROPANE CARTRIDGE	D001
W90WDF00743	684000HERBECIDE	CIBA-GEIGY CORP	PRINCEP 80 W HERBECIDE	NON-RCRA
W90WDF01013	8030000087196	PRC-DESOTO	PRO SEAL 870 A-2 SEALING COMPOUND KIT	D001 D007
W90WDF01289	6830009857278	COMMONWESLTH PROPANE	PROPANE	D001
W90WDF00126	6830002617445	WESTERN INDUSTRIES	PROPANE CYLINDER	D001
W90WDF01455	681000ACID	FISHER SCIENTIFIC	PROPIONIC ACID	D001 D002
W90WDF01290	3433011614998	TURNER DIVISION	PROPYLENE	D001
W90WDF00814	8030000249634	ESSEX CHEMICAL	PROSEAL 894 ACCELERATOR SEALING COMPOUND	NON RCRA
W90WDF00815	8030000249634	ESSEX CHEMICAL	PROSEAL 894 BASE SEALING COMPOUND	NON RCRA

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00850	8040008458991	POLYMERIC SYSTEMS	PSI 690 PRIMER	D001
W90WDF00134	8040013317471	POLYMERIC SYSTEMS	PSI-601 BLACK SILICONE SEALANT	NON-RCRA
W90WDF00637	8040008658991	POLYMERIC SYSTEMS	PSI-601 SILICONE SEALANT	NON-RCRA
W90WDF00754	6840008237849	WHITMIRE	PT 565 PLUS PYRETHRUM INSECT FOGGER	NON-RCRA
W90WDF00629	681000DEGREASER	PRESSURE CLEANING SYSTEMS	PURPLE CLEANER/DEGREASER	D002
W90WDF00348	4210002990010	ANSUL FIRE PROTECTION	PURPLE K FIREFIGHTING CHEMICAL	NON-RCRA
W90WDF01016	8040013478643	OATEY	PURPLE PRIMER/CLEANER, 30783	D001 D035
W90WDF01207	803000PRIMER	CAT	QUICK CURE PRIMER(AEROSOL)	D001 D003
W90WDF01322	650500CAPSUL	KERR COMPANY	QUICKSILVERAMALGAM	D009 D011
W90WDF00930	6850005987311	GUARDSMEN PRODUCTS	RADIATOR LEAK PREVENTATIVE COMPOUND	NON-RCRA
W90WDF00447	915000RAGS	SPILL CLEANUP	RAGS CONTAMINATED WITH GREASE	NON-RCRA
W90WDF00061	913000RAGS	SPILL CLEAN UP	RAGS CONTAMINATED WITH JP8	NON-RCRA
W90WDF00838	913000RAGS	10TH MTN 01-06	RAGS CONTAMINATED WITH MOGAS	NON-RCRA
W90WDF00099	913000RAGS	SPILL	RAGS CONTAMINATED WITH MOGAS	D001 D018
W90WDF00095	915000RAGS	CLEAN UP	RAGS CONTAMINATED WITH OIL	NON-RCRA
W90WDF01269	8030000572354	PARKER AMCHEM	RAGS SOAKED IN ALODINE	D002
W90WDF00595	675000F032760	UNICOLOR	RAPID E-6 1ST DEVELOPER PART A	NON-RCRA
W90WDF00711	675000F032761	PHOTO SYSTEMS INC.	RAPID E-6 BLIX PART C	NON-RCRA
W90WDF00561	675000F032807	UNICOLOR INC	RAPID E-6 COLOR DEVELOPER PART A	D002
W90WDF00560	675000F032807	UNICOLOR DIV	RAPID E-6 COLOR DEVELOPER PART B	D002
W90WDF00257	6750005280473	KODAK	RAPID FIXER PART A	NON-RCRA
W90WDF00005	675000FIXER	SYNERGY GRAPHICS	RAPID PROCESS FIXER	NON-RCRA
W90WDF00530	681000ALCOHOL	FISHER SCIENTIFIC	REAGENT ALCOHOL	D001
W90WDF00566	6140013260387	POWERSONIC	RECHARGABLE LEAD ACID BATTERY PS-6100	WASTE
W90WDF00721	6140012328980	POWER-SONIC CORP	RECHARGABLE SEALED LEAD ACID BATTERY	WASTE
W90WDF00766	804000N022370	RECTOR SEAL CORP	RECTOR SEAL HOMER 828 PVC CEMENT	D001
W90WDF00616	803000SEALANT	RECTORSEAL CORP.	RECTORSEAL NO.5	RCRA
W90WDF00962	6665011340885	TRUETECH DEMIL ITEM	RED BAND SIMULANT TUBE(M272 KIT)	D003 P098
W90WDF00740	804000ADHESIVE	THERMAL CERAMICS INC	REFACTORY CERAMIC FIBER PRODUCT	NON-RCRA
W90WDF00919	6665008592214	DEMIL ITEM	REFILL KIT M229 PART A	NON-RCRA
W90WDF00920	6665008592214	DEMIL ITEM	REFILL KIT M229 PART B	D001 D011
W90WDF00921	6665008592214	DEMIL ITEM	REFILL KIT M229 PART C	U088
W90WDF01292	6830013554011	NATIONAL	REFRIGERANT - 12	NON-RCRA
W90WDF01293	6830002904375	NATIONAL	REFRIGERANT-22	NON-RCRA
W90WDF01509	ITE	PPG INDUSTRIES	REGAL CALCIUM HYPOCHLORITE GRANULES	D001
W90WDF01021	803000SEALANT	DAP	RELY-ON LATEX CAULK	NON-RCRA
W90WDF00405	2090003726064	FLEX-HESIVE CO	REPAIR KIT STANDARD EPOXY RESIN PART 3	NON-RCRA
W90WDF00408	2090003726064	FLEX-HESIVE CO	REPAIR KIT STANDARD EPOXY RESIN PART 4	NON-RCRA
W90WDF00418	2090003726064	FLEX-HESIVE CO	REPAIR KIT STANDARD HARDENER PART 2	NON-RCRA
W90WDF00415	2090003726064	FLEX-HESIVE CO	REPAIR KIT STANDARD PASTE HARDENER PART 1	NON-RCRA

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00703	2640009226917	BARNES/ADAMS PSP INC.	REPAIR KIT, PUNCTURE	D001
W90WDF00812	8030000861506	SHELL CHEMICAL	RESIN COATING	NON-RCRA
W90WDF01173	6850002246663	INTERNATIONAL LUBRICATES	RIFLE BORE CLEANER	D001
W90WDF01192	8030000SEALANT	PERMATEX	RIGHT STUFF GASKET MAKER (NON AEROSOL)	NON-RCRA
W90WDF00004	6750000DEVELOPER	SYNERGY GRAPHICS	RINN DENTAL X-RAY DEVELOPER	NON-RCRA
W90WDF01084	8030000EPOXY	HILTI	RM 710 EP LO-TEMP EPOXY MORTAR KIT	NON-RCRA
W90WDF01146	6840001806069	SANEX AGRO INC	ROACH AND ANT SPRAY CARBAMATE INSECTICIDE	NON-RCRA
W90WDF00482	561000F028117	KOPPER'S ROOFING SERVICE	ROOFING TAR	D001
W90WDF01500	6850000FERTILIZER	GREEN LIGHT	ROSE DEFEINSE	NON-RCRA
W90WDF01271	8040011680077	GE	RTV 133 SILICONE RUBBER ADHESIVE SEALANT	NON-RCRA
W90WDF00987	8030000SILICONE	NOVAGARD	RTV 200 SERIES SILICONE PRODUCTS	NON-RCRA
W90WDF01205	8030000SILICONE	GE SILICONES	RTV 910 SILICONE	NON-RCRA
W90WDF01319	8040001450020	DOW CORNING	RTV ADHESIVE SEALANT-GRAY	NON-RCRA
W90WDF00716	6850000SEALANT	STATE CHEMICAL INC.	RTV RED SEALANT	NON-RCRA
W90WDF00501	6850011594844	WACKER SILICONES	RTV SILICON RUBBER T 330	NON-RCRA
W90WDF00254	8030000N070155	LAWSON PRODUCTS	RTV SILICONE 91775	NON-RCRA
W90WDF00960	8040009386860	LHB INDUSTRIES	RUBBER ADHESIVE AEROSOL	D001 D003
W90WDF00219	80300005468621	AEROSOL SYSTEMS INC.	RUBBERIZED UNDERCOAT, TM2020	D001
W90WDF01393	8040000SOLVENT	OMEGA LAB	RUST BUSTER (RUST PENETRANT/INHIBITOR)	NON-RCRA
W90WDF00988	6810000REMOVER	MAJESTIC OILFIELD CHEMICALS	RUST-AWAY RUST AND SCALE REMOVER	D002
W90WDF01241	6640009351485	FISHER SCIENTIFIC	SOP15 PERMOUNT MOUNTING MEDIUM, MICROSCOPY SOLUTION	D001
W90WDF01456	6800000ACID	FISHER SCIENTIFIC	SALICYLIC ACID	NON-RCRA
W90WDF01047	8040001711535	3M	SCOTCH BRAND SPRAY MOUNT ADHESIVE 6065(AEROSOL)	D001 D003
W90WDF01364	6840013598533	AGREVO	SCOURGE INSECTICIDE	NON-RCRA
W90WDF00276	6140000BATTERY	HAWKER ENERGY	SEALED LEAD ACID BATTERY	WASTE
W90WDF00718	6140013454297	FLUKE, JOHN MFG CO INC	SEALED MAINTENANCE FREE BATTERIES	WASTE
W90WDF00813	8030001805931	CIBA-CEIGY CORP	SEALING COMPOUND 946 HARDNER	NON-RCRA
W90WDF00807	8030013871069	COURTAULDS AEROSPACE	SEALING COMPOUND ACTIVATOR	D001 D035
W90WDF00515	80300000822508	CHEMENCE INC	SEALING COMPOUND PRIMER/ACTIVATOR	D001
W90WDF00808	8030013871069	COURTAULDS AEROSPACE	SEALING COMPOUND RESIN	D001 D035
W90WDF00441	8030013504984	CANADIAN CHEMICAL COATINGS	SEALING COMPOUND SYNTANE 5944	D001 D035
W90WDF00374	8030007838898	FLAMEMASTER CORP	SEALING COMPOUND, CS 1900 PART A	D001 D035
W90WDF00848	8030011045392	CHEMENCE INC.	SEALING COMPOUND, RITELOK	NON-RCRA
W90WDF00816	80300000812335	CHEMENCE INC	SEALING LOCKING & RETAINING SEALING COMPOUND	NON-RCRA
W90WDF01145	8030000SEALING	W.R. MEADOWS	SEALTIGHT CS-309 SEALING COMPOUND	D001
W90WDF00115	8030013504984	KENYON CONSUMER PRODUCTS	SEAM SEALANT 83-234C (K-KOTE)	D001
W90WDF00203	6505001161367	BRISTOL-MYERS SQUIBB CO	SEBUTONE	NON-RCRA
W90WDF01075	6665013534882	BACHARACH INC	SENSOR, 02 'R' CELL, CHEMICAL AGENT DETECTING CELL	D002
W90WDF01485	6850013622182	BARTLETT CHEMICALS	SEQUESTANT (WT1270)/CATFLOC 1020 POLYELECTROLYTE MIX	NON-RCRA
W90WDF00242	8010001116384	SERMATECH INTERNATIONAL	SERMETEL 249 SOLUTION	NON-RCRA

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF01101	6840010334481	OCTAGON PROCESS	SEVIN, INSECTICIDE	U279
W90WDF01134	6850003685233	SHELL OIL	SHELL VPI 260, CORROSION INHIBITOR VAPOR BARRIER	NON-RCRA
W90WDF01188	7930014367973	SPARTAN CHEMICAL	SHINELINE EMULSIFIER PLUS FLOOR POLISH REMOVER	D002
W90WDF00717	915000F054237	CHEMAX CORP	SHIP TO SHORE G119 GREASE	NON-RCRA
W90WDF01163	7930013808406	JOHNSON WAX	SHOW PLACE FLOOR FINISH	NON-RCRA
W90WDF00773	8030010751156	GIBSON-HOMAN'S	SHUR-STIK ACRYLIC CAULK	NON-RCRA
W90WDF01057	6850003069596	SIFCO SELECTIVE PLATING	SIFCO SELECTRON PLATING SOLUTION, CADMIUM LHE	D006
W90WDF00905	681000N070467	CALGON CORP	SILICA 1 REAGENT	D002
W90WDF00429	6850010463643	LOCTITE CORP	SILICONE COMPOUND	NON-RCRA
W90WDF00409	8040010108758	ACCUMETRIC INC.	SILICONE ELASTOMER PRIMER	D001
W90WDF00854	6850001775094	POLYSI TECHNOLOGIES	SILICONE GREASE	NON RCRA
W90WDF00835	9150002575358	FOAM SEAL INC.	SILICONE GREASE G-351	D003
W90WDF00320	6750013023560	CANON USA INC	SILICONE OIL, FIXING BATH, PHOTOGRAPHIC S-20	NON-RCRA
W90WDF00381	6505002399672	GRAHAM FIELD INC	SILVER NITRATE APPLICATORS 2867-1590	D001 D011
W90WDF00198	6505002999672	GRAHAM FIELD INC	SILVER NITRATE APPLICATORS 2867-1590	D001 D011
W90WDF01490	421000F047127	ANSUL FIRE PROTECTION WORMALD U	SILV-EX FOAM CONCENTRATE	D001
W90WDF01308	6850012648680	MAGNAFLUX	SKD-S SPOTCHECK DEVELOPER	D001
W90WDF00953	685000SKIN GUARD	BUILDING MAINTENANCE CORP.	SKIN GUARD(AEROSOL)	D001 D003
W90WDF00138	803000F041092	SCHNEE-MOREHEAD CHEMICALS	SM 7100 POLYURETHANE SEALANT	NON-RCRA
W90WDF01048	685000HMC0075	PENZOIL-QUAKER STATE	SNAP FIX-A-FLAT (AEROSOL)	D001 D003
W90WDF01122	6520009582247	KERR	SNOW WHITE NO 2 DENTAL PLASTER	NON-RCRA
W90WDF00484	6840009261686	LIGHTHOUSE FOR THE BLIND	SO SURE S-70 DISINFECTANT DETERGENT	NON-RCRA
W90WDF00200	6505007826484	GRACE W.R. AND CO.	SODASORB ABSORBANT	NON-RCRA
W90WDF01282	6500007826484	GRACE W.R. AND COMPANY	SODASORB ABSORBENT	NON-RCRA
W90WDF01450	ACETATE	FISHER SCIENTIFIC	SODIUM ACETATE TRIHYDRATE	NON-RCRA
W90WDF01199	6810002628587	CHEMICAL COMMODITIES	SODIUM CHLORATE, ANALYZED REAGENT	D001
W90WDF01522	DICHROMATE	CHEM ONE	SODIUM DICHROMATE DIHYDRATE	D001 D007
W90WDF00133	6810011643941	CHEM ONE CORP	SODIUM HEXAMETAPHOSPHATE	NON-RCRA
W90WDF00543	681000SODIUM	MALLINCKRODT BAKER	SODIUM HYDROXIDE	NON-RCRA
W90WDF01440	HYDROXIDE	FISHER SCIENCE	SODIUM HYDROXIDE PELLETS	D002
W90WDF00384	6810010713612	HACH CO	SODIUM HYDROXIDE SOLUTION	D002
W90WDF00259	6810001817557	SPECTRUM CHEMICAL	SODIUM HYDROXIDE SOLUTION	D002
W90WDF01400	685000SPILL	PORMOSA PLASTICS CORP	SODIUM HYDROXIDE SPILL MEDIA	D002
W90WDF01438	NITRATE	FISHER SCIENTIFIC	SODIUM NITRATE	D002
W90WDF00230	6505011434641	PASADENA RESEARCH LABORATORIES	SODIUM NITRITE INJECTION	NON-RCRA
W90WDF00396	6505011434641	TAYLOR PHARMACEUTICALS	SODIUM NITRITE INJECTION	NON-RCRA
W90WDF00574	6505010095019	ELKINS-SINN INC	SODIUM NITROPRUSSIDE	NON-RCRA
W90WDF00552	6810003943557	HACH CO.	SODIUM PERIODATE FOR MANGANESE	D001
W90WDF00582	681000PERIODATE	HACH CO.	SODIUM PERIODATE OF MANGANESE	D001
W90WDF01452	681000SODIUM	FISHER SCIENTIFIC	SODIUM PHOSPHATE DIBASIC HEPTAHYDRATE	NON-RCRA

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00538	681000SULFATE	FISHER SCIENTIFIC	SODIUM SULFATE	NON-RCRA
W90WDF01445	TETRABORATE	FISHER SCIENTIFIC	SODIUM TETRABORATE DECAHYDRATE	NON-RCRA
W90WDF00678	6810SODIUM	FISHER SCIENTIFIC	SODIUM THIOSULFATE	NON RCRA
W90WDF00407	6810001746602	CHEMICAL COMMODITIES AGENCY	SODIUM THIOSULFATE SOLUTION	NON-RCRA
W90WDF00841	999900SPILL	SPILL DEBRIS	SOIL CONTAMINATED W/CORROSIVE	D002
W90WDF00950	915900SPILL	ISB	SOIL CONTAMINATED W/HYDRAULIC FLUID	NON-RCRA
W90WDF00111	913000SOIL	CLEAN UP	SOIL CONTAMINATED WITH JP8	NON-RCRA
W90WDF00868	915000SOIL	SPILL	SOIL CONTAMINATED WITH OIL	NON-RCRA
W90WDF00222	914000SOIL	SPILL	SOIL/DRY SWEEP CONTAMINATED WITH MOGAS	D001 D018
W90WDF01023	913000SOIL	SPILL TEST RESULTS	SOIL/DRY SWEEP CONTAMINATED WITH GASOLINE	D001 D018
W90WDF00866	3439002203827	R&D METALS AND CHEM	SOLDERING FLUX LIQUID R&D 100	D001
W90WDF00269	9150009486912	E/M CORPORATION	SOLID FILM LUBRICANT, ECOALUBE 642	D035
W90WDF00164	8030002441297	ASHLAND OIL	SOLVENT CUTBACK/TECTYL 502C	D001
W90WDF01215	803000F031369	SONNEBORN	SONNEBORN SONOLASTIC SL-2 BASE SEALANT	D009
W90WDF01216	803000F036323	SONNEBORN	SONOLASTIC SL-1 Limestone & GRAY PIGMENT	NON-RCRA
W90WDF00237	6850011574348	SONOTECH INC	SOUNDSAFE ULTRASONIC COUPLANT COMPOUND	NON-RCRA
W90WDF00270	685000F029759	HACH CO.	SPADNS FLOURIDE REAGENT	D002
W90WDF00840	361000INK	HUNT MFG CO	SPEEDBALL INK	NON RCRA
W90WDF00060	1362005985207	DEMIL, DOL ASP	SPENT SMOKE POTS	D006 D008
W90WDF01430	913000SPILL	SHELL	SPILL DEBRIS (SOIL CONTAMINATED WITH GAS/BENZENE)	D018
W90WDF01491	999999SPILL	SHERWIN WILLIAMS	SPILL MEDIA - ENAMEL PAINT AND DRY SWEEP	D001
W90WDF01520	999900GASOLINE	SPILL MEDIA	SPILL MEDIA - GASOLINE AND FC-206 LIGHT WATER (FOAM)	D001 D018
W90WDF00011	999900SPILL	PAINT SPILL	SPILL RESIDUE	NON-RCRA
W90WDF01533	681000PRIMER	GE SILICONE	SS4179 SILICONE PRIMER	D001 D018
W90WDF01189	6840011837244	WELLMARK INTERNATIONAL	STARBAR IMPROVED GOLDEN MARLIN FLY BAIT	NON-RCRA
W90WDF00904	685000N030098	GARRATT-CALLAHAN CO.	STARCH ACID INDICATOR CODE 230	NON-RCRA
W90WDF00503	915000GREASE	EQUILON INDUSTRIES	STARPLEX 2 GREASE	NON-RCRA
W90WDF00449	915000N044659	KAR PRODUCTS	STARTING FLUID	D001 D003
W90WDF00229	FLUID	SNAP BRAND	STARTING FLUID	D001 D003
W90WDF00769	6850008237861	SPRAY PRODUCTS	STARTING FLUID AEROSOL	D001
W90WDF00135	915000N037816	AIROSOL CO.	STARTING FLUID CYLINDER	D001
W90WDF00215	2910004706768	SPRAY PRODUCTS	STARTING FLUID, AEROSOL	D001 D003
W90WDF00223	FLUID	TRADCO CORP.	STARTING FLUID, AEROSOL	D001 D003
W90WDF00214	685000N003365	RADIATOR SPECIALTY	STARTING FLUID, AEROSOL, INSTANT BRAND	D001 D003
W90WDF00245	FLUID	LAWSON PRODUCTS	STARTING FLUID, AEROSOL, KWIK START	D001 D003
W90WDF00218	FLUID	RADIATOR SPECIALTY	STARTING FLUID, AEROSOL, LIQUID FIRE M-39-11	D001 D003
W90WDF01089	2910004706768	SPRAY PRODUCTS	STARTING FLUID, AEROSOL, SPRAY BRAND	D001 D003
W90WDF01219	3439002554566	JW HARRIS	STAY CLEAN SOLDERING FLUXES	NON-RCRA
W90WDF01386	3439009148390	J.W. HARRIS CO INC.	STAY SILV WHITE BRAZING FLUX	NON-RCRA
W90WDF01388	681000CHEM	STERIS	STERIS 20 STERILANT CONCENTRATE	D001 D002

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00457	911000N028079	CPL INDUSTRIES	STERNO CANNED HEAT COOKING FUEL	D001
W90WDF01512	685000CLEANER	DOL REBUILD SHOP	STILL BOTTOM CAUSTIC PARTS CLEANER	D008
W90WDF01374	6840011837244	TROY	STIMUKIL FLY BAIT	NON-RCRA
W90WDF00185	6510011684365	CONVATEC	STOMAHESIVE PASTE	D001
W90WDF01399	793000STRIPPER	HILLYARD INDUSTRIES	STRIP-ALL	D002
W90WDF00673	655000F031230	DADE MICROSCAN	SULFANIC ACID	U159
W90WDF00692	6550011399544	BIOMERIEUX VITEK INC	SULFANILIC ACID REAGENT	D002
W90WDF00386	681001SULFUR	HUMCO HOLDING GROUP	SULFUR	NON-RCRA
W90WDF00544	681000REAGENT	HACH CO	SULFUR 4 SULFATE REAGENT	NON-RCRA
W90WDF00676	6810SULFUR	LAMOTTE COMPANY	SULFUR DIOXIDE ABSORBING SOLUTION	NON-RCRA
W90WDF00331	681000REAGENT	LAMOTTE CO	SULFUR DIOXIDE REAGENT #1	NON-RCRA
W90WDF00330	681000REAGENT	LAMOTTE CO	SULFUR DIOXIDE REAGENT #2	NON-RCRA
W90WDF00540	681000SULFUR	LAMOTTE CO	SULFUR DIOXIDE REAGENT #2	D001
W90WDF00529	650500REAGENT	LAMOTTE CO.	SULFUR DIOXIDE REAGENT #3	D002
W90WDF00329	681000REAGENT	LAMOTTE CO	SULFUR DIOXIDE REAGENT #3	D002
W90WDF01443	6810001467520	FISHER SCIENCE CHEMICALS	SULFURIC ACID	D002
W90WDF00532	6810011816229	HACH CO	SULFURIC ACID	D002
W90WDF01489	6850001694717	RESEARCH PRODUCTS CORPORATION	SUPER FILTER COAT #411	NON-RCRA
W90WDF01385	3439002554572	SUPERIOR FLUX MFG CO	SUPERIOR NO. 19 POWDER BRAZING FLUX	NON-RCRA
W90WDF00235	685000SANITIZER	BIO-LAB	SWIMMING POOL SANITIZER, BIOGUARD CLC WP	D001
W90WDF01028	6240005513098	GEN ELECTRIC CO	SYLVANIA LUMALUX LAMPS	D009
W90WDF01235	9620002042643	ASBURY GRAPHITE	SYNTHETIC GRAPHITE	NON-RCRA
W90WDF00118	6850011594844	WACKER SILICONES	T-330 RTV SILICONE COMPOUND	NON-RCRA
W90WDF01100	6840011514884	ICI AMERICAS	TALON-G RODENTICIDE BAIT PACK	NON-RCRA
W90WDF00931	915000N000279	STECO CORP	TAP MAGIC ALUMINUM CUTTING FLUID	NON-RCRA
W90WDF00947	9150000687864	STECO CORP.	TAP MAGIC CUTTING FLUID	NON-RCRA
W90WDF00933	675000DEVELOPER	KODAK	TECHNIDOL LIQUID DEVELOPER(CONCENTRATE)	NON-RCRA
W90WDF00156	8030006644017	VALVOLINE	TECTYL 275 CORROSION PREVENTIVE/FINGERPRINT REMOVER	NON-RCRA
W90WDF00151	8030005985915	VALVOLINE	TECTYL 437 CORROSION PREVENTIVE COMPOUND	NON-RCRA
W90WDF00106	8030001180666	STEVEN INDUSTRIES	TECTYL 502C RUST PREVENTIVE COATING	D001
W90WDF01055	8030005261605	ASHLAND OIL	TECTYL 846 CORROSION PREVENTIVE COMPOUND	D001
W90WDF00911	8030002312345	VALVOLINE OIL CO	TECTYL 891	D001
W90WDF00315	TER	STREK LABORATORIES	TEMP CHEX THERMOMETER	NON-RCRA
W90WDF00663	6550010237977	BAYER CORP	TEST KIT BILLIRUBIN	NON RCRA
W90WDF01508	6810014563614	STANDARD OIL	TETRACHLOROETHYLENE	U210
W90WDF00770	361000INK	NAZDAR	TEXTILE INK	D001
W90WDF01186	803000N050749	KAR PRODUCTS	TFE PIPE THREAD SEALER	NON-RCRA
W90WDF00483	5970001617232	BALL CHEMICAL CO	THERMELEC INSULATING VARNISH G-3726	D001
W90WDF00313	TER	SPECTRUM	THERMOMETER WALL MOUNTED	D009
W90WDF00342	6685002422158	WEISS INSTRUMENTS	THERMOMETER-INDUSTRIAL	D009



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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00372	803000F013752	THOMPSONS	THOMPSON'S WATER SEAL	D001
W90WDF00490	803000B200082	THOMPSON & FORMBY	THOMPSON'S WOOD PROTECTOR	D001
W90WDF01532	AGENT	DEGUSSA BUILDING SYSTEMS	THORO ACRYL 60 (CURING AGENT)	NON-RCRA
W90WDF00244	915000N047843	NCH CORP	THREAD EZE LUBRICANT BRUSH TOP	NON-RCRA
W90WDF01223	803000HMC0019	CHEMAX	THREDZ ANTISIEZE COMPOUND AEROSOL	D001 D003
W90WDF00624	685000B180009	RADIATOR SPECIALTY CO.	THRUST QUICK STARTING FLUID	D001 D003
W90WDF00746	685000D003017	RADIATOR SPECIALTY	THRUST QUICK STARTING FLUID	D001
W90WDF00495	6505002617257	MOYCO INDUSTRIES	TINCTURE BENZOIN COMPOUND	D001
W90WDF01024	915000N070526	TECHNICAL RUBBER	TIRE AND TUBE COMPOUND 723	NON-RCRA
W90WDF00586	BATH	KODAK	T-MAX 100 DIRECT POSITIVE FILM CLEARING BATH	NON-RCRA
W90WDF00587	675000DEVELOPER	KODAK	T-MAX 100 DIRECT POSITIVE FILM REDEVELOPER	NON-RCRA
W90WDF00934	675000DEVELOPER	KODAK	T-MAX DEVELOPER(CONCENTRATE)	NON-RCRA
W90WDF00432	6810005798431	CSD INC.	TOLUENE, TECHNICAL	D001 U220
W90WDF00067	6850010114937	BELL & HOWELL	TONER, TYPE D	D001
W90WDF01539	803000ALODINE	HENKEL	TOUCH-N-PREP COATING - ALODINE 1132	D002 D007
W90WDF01237	7930002667128	SC JOHNSON	TRAFFIC PASTE WAX	D001
W90WDF00428	6910011011768	MINE SAFETY PRODUCTS	TRAINING AID, PERSONAL DECON KIT	D001
W90WDF01356	ER	DPW ELECTERIC	TRANSFORMER	NON-RCRA
W90WDF01464	681000ACID	3M CO	TRICHLOROISOCYANURIC ACID	D001
W90WDF00516	681000N018871	ALDRICH CHEMICAL	TRICHLOROMELAMINE	D001 D003
W90WDF00801	804000ADHESIVE	ACE HARDWARE	TROWELABLE CONSTRUCTION 12878	D001 D018
W90WDF00788	803000CURING	TEXAS REFINERY CORP	TROXIMATE CURING AGENT	D002
W90WDF00789	R	TEXAS REFINERY CORP	TROXIMATE RESURFACER	NON-RCRA
W90WDF00927	6580009652332	TURCO PUREX INDUSTRIES	TURCO 6321	NON RCRA
W90WDF00508	7510006169588	AMERICAN WRITING INC	TYPE CLEANER TECHNICAL	NON-RCRA
W90WDF00886	6525012244792	PICKER INTERNATIONAL	TYPE S DEVELOPER REPLENISHES 3-7-90 PART A, B, AND C (KIT)	D002
W90WDF01090	685000N006418	PERRY-AUSTEN INTERNATIONAL	U-300 CONDITIONER	D001
W90WDF01375	793000SOLVENT	QUALITY UNLIMITED PRODUCTS	ULV FLUSHING SOLVENT	D001
W90WDF01403	685000LIQUID	OPS GROUP	UNKNOWN LIQUID	NON-RCRA
W90WDF00924	999900SPILL	WATER PLANT TOLP	UNKNOWN LIQUID SPILL CLEAN UP	D019 D022
W90WDF01119	681000WASTE	TEST RESULTS	UNKNOWN RED LIQUID	D015 D018
W90WDF00491	801000N079073	CARBOLINE	URETHANE CONVERTER 900	D001
W90WDF00065	803000URETHANE	CONAP	URETHANE PREPOLYMER CONAP TU 4010 PART A	NON-RCRA
W90WDF01541	R	DOL MAINT	USED ANTIFREEZE	WASTE
W90WDF01542	684000SLUDGE	ACCUMULATION DRUM HAZMART	USED ANTIFREEZE SLUDGE	D039
W90WDF00008	431000FILTER	ACCUMULATION	USED FUEL FILTERS(DRY)	NON-RCRA
W90WDF00012	664000FILTERS	TEST RESULTS	USED INLAND FILTERS	D001 D006
W90WDF01095	664000FILTERS	TEST RESULTS	USED INLAND FILTERS	D001 F003
W90WDF00747	664000FILTERS	N/A	USED INLAND FILTERS	F005
W90WDF01294	664000FILTER	ACCUM DRUM	USED INLAND FILTERS (S6 HAZSTOR)	D001 D018



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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF01510	664000FILTERS	ACCUM DRUM	USED INLAND FILTERS/SLUDGE	D006
W90WDF00675	6550011536988	BIOMERIEUX VITEK INC	V7052 FERRIC CHLORIDE 10%	NON RCRA
W90WDF01251	7910010685662	814TH ENG	VACCUM CONTAINING ASBESTOS	
W90WDF01334	8040011609551	LORD'S	VERSILOK 204	D001
W90WDF01502	655000MEDICAL	ABAXIS, INC	VETSCAN HMT-LYRIC AGENT-ISOTONIC DETERGENT	NON-RCRA
W90WDF01208	793000HMC0061	AMF	VISFLO BOWLING LANE CONDITIONER	NON-RCRA
W90WDF00321	6850008807616	RHODIA INC	VISILOX V-724 SILICONE COMPOUND	NON-RCRA
W90WDF00351	9150002500926	QPL INC	VV-P-236 PETROLATUM	NON-RCRA
W90WDF01424	801000N078495	STATE CHEMECAL LTD	WASTE -F596 CONCRETE SEALER (PART A AND PART B)	NON-RCRA
W90WDF00883	675000FIXDEV	8300 BLOCK	WASTE FIXER DEVELOPER MIX	D010
W90WDF01341	675000FIXDEV	ACCUM DRUM 8300 BLOCK	WASTE FIXER DEVELOPER MIX	D011
W90WDF01413	675000FIX/DEV	8300 BLOCK	WASTE FIXER/DEVELOPER MIX	NON-RCRA
W90WDF00983	681000REMOVER	MAJESTIC OILFIELD CHEM	WASTE FLAMMABLE LIQUID N.O.S.	D001
W90WDF00601	431000FILTER	ACCUM DRUM FILTER 8300 BLOCK	WASTE FUEL (POL) FILTER	D040
W90WDF00161	915000GREASE	TEST RESULTS	WASTE GREASE	NON-RCRA
W90WDF01395	684000INSECTICIDE	8300 BLOCK ACCUM DRUM	WASTE INSECTICIDE	D001 D039
W90WDF01340	684000	ACCUM DRUM 8300 BLOCK	WASTE INSECTICIDE	D039
W90WDF01505	684000INSECTICIDE	ACCUM DRUM 8300 BLOCK	WASTE INSECTICIDE	NON-RCRA
W90WDF01010	684000INSECTICIDE	TEST RESULTS 8300 BLOCK	WASTE INSECTICIDE	D019 D028
W90WDF00750	00INSECTICIDE	ACCUM DRUM 8300	WASTE INSECTICIDE	D040
W90WDF01471	684000INSECTICIDE	ACCUM DRUM 8300 BLOCK	WASTE INSECTICIDE	D012 D029
W90WDF01249	684000INSECTICIDE	8300 BLOCK ACCUM DRUM	WASTE INSECTICIDE	D039 D040
W90WDF01544	684000INSECTICIDE	DPW 8300 BLOCK	WASTE INSECTICIDE (AEROSOL ACCUMULATION DRUM)	D039 D040
W90WDF01272	684000INSECT	8300 BLOCK	WASTE INSECTICIDE ACCUMULATION DRUM	D039 D040
W90WDF00602	684000FILTER	TEST RESULTS	WASTE INSECTICIDE FILTER(8300 BLOCK)	D040
W90WDF01462	801000PAINT	JT BAKER	WASTE LATEX PAINT	NON-RCRA
W90WDF01482	801000PAINT	ACCUM DRUM	WASTE LATEX PAINT	NON-RCRA
W90WDF00304	685000LIQUID	TEST RESULTS	WASTE LIQUID	D010
W90WDF01412	681000LIQUID	LH AVIM	WASTE LIQUID	D035 D039
W90WDF00302	685000LIQUID	TEST RESULTS	WASTE LIQUID	D001
W90WDF00303	685000LIQUID	TEST RESULTS	WASTE LIQUID (AEROSOL PUNCTURE INSECTICIDE)	D001 D040
W90WDF01406	681000DEGREASER ZEP		WASTE LIQUID CLEANER (ZEP)	D006 D008
W90WDF01411	681000SOLVENT	LH AVIM	WASTE LIQUID SOLVENT	D006 D010
W90WDF00160	681000LIQUID	TEST RESULTS	WASTE LIQUID(BLACK)	NON-RCRA
W90WDF00207	681000LIQUID	TEST RESULTS	WASTE LIQUID(BROWN)	NON-RCRA
W90WDF00208	681000LIQUID	TEST RESULTS	WASTE LIQUID(CLEAR)	NON-RCRA
W90WDF00162	681000LIQUID	TEST RESULTS	WASTE LIQUID(ORANGE)	NON-RCRA
W90WDF01409	801000PAINT	ACCUM DRUM	WASTE PAINT	D035
W90WDF01498	801000PAINT	VALSPAR CORP	WASTE PAINT	D001
W90WDF01469	801000PAINT	ACCUM DRUM 8300 BLOCK	WASTE PAINT	D035

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF01494	801000PAINT	ACCUM DRUM	WASTE PAINT	D001 D005
W90WDF01524	801000PAINT	ACCUMULATION DRUM	WASTE PAINT	D035 D039
W90WDF01431	801000PAINT	ACCUM DRUM	WASTE PAINT	D008 D035
W90WDF01467	801000PAINT	ACCUM DRUM 2ND ACR	WASTE PAINT	D007 D035
W90WDF01506	801000PAINT	ACCUM DRUM 8300 BLOCK	WASTE PAINT	D035
W90WDF01531	801000PAINT	ACCUM DRUM HAZMART	WASTE PAINT	D001 D035
W90WDF01436	801000PAINT	ACCUM DRUM	WASTE PAINT	D035
W90WDF01421	801000PAINT	8300 BLOCK ACCUM DRUM	WASTE PAINT	D035
W90WDF01497	801000PAINT	WASTE PAINT ACCUM DRUM	WASTE PAINT	D007 D008
W90WDF01414	801000PAINT	ACCUM-DRUM	WASTE PAINT	D001 D035
W90WDF01492	801000PAINT	ACCUM DRUM	WASTE PAINT	D007 D035
W90WDF01481	801000PAINT	ACCUM DRUM	WASTE PAINT	D035
W90WDF01511	801000PAINT	DOL ACCUMULATION DRUM	WASTE PAINT	D039 D040
W90WDF01422	801000PAINT	SHERWIN WILLIAMS	WASTE PAINT	D001
W90WDF00946	8010000822450	PRATT & LAMBERT	WASTE PAINT - 724222 PRIMER COATING	D001
W90WDF01112	801000PAINT	PUNCTURE DRUM	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D008 D018
W90WDF00017	801000PAINT	ACCUMULATION	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D001
W90WDF01222	801000PAINT	8300 BLOCK	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D039 D040
W90WDF00524	801000PAINT	TEST RESULTS	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D001 D040
W90WDF01250	801000PAINT	8300 BLOCK ACCUM DRUM	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D039 D040
W90WDF01302	801000PAINT	ACCUM DRUM 8300 BLOCK	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D039
W90WDF01382	801000PAINT	8300 BLOCK	WASTE PAINT - 8300 BLOCK ACCUM DRUM	
W90WDF00015	801000PAINT	ACCUMULATION	WASTE PAINT - 8300 BLOCK ACCUM DRUM	NON-RCRA
W90WDF01279	801000PAINT	8300 BLOOCK 03-02	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D039 D040
W90WDF01338	801000PAINT	ACCUM DRUM 8300 BLOCK	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D035
W90WDF00752	801000PAINT	ACCUM DRUM 8300	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D001
W90WDF01394	801000PAINT	8300 BLOCK ACCUM DRUM	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D001
W90WDF00939	801000PAINT	TEST RESULTS	WASTE PAINT - 8300 BLOCK ACCUM DRUM	D001
W90WDF01327	8010014416031	COURTAULDS AEROSPACE	WASTE PAINT - 910X942 HS PRIMER ACTIVATOR	D001 D035
W90WDF00792	8010014416030	COURTAULDS AEROSPACE	WASTE PAINT - 910X942HS PRIMERACTIVATOR	D001 D035
W90WDF01036	8010-00-PAINT	WASTE PAINT ACCUM DRUM	WASTE PAINT - ACCUM DRUM	D018
W90WDF00047	801000PAINT	8300 BLOCK	WASTE PAINT - ACCUM DRUM 8300 BLOCK	D001
W90WDF00152	8010001818080	CHEMICAL SPECIALISTS & DEVELOPMENT	WASTE PAINT - AIRCRAFT COATING THINNER	D001 D035
W90WDF00732	801000F029240	SHERWIN WILLIAMS	WASTE PAINT - ALKYD GLOSS & SPECIALTY FINISHES	D001
W90WDF01263	8010001417838	AKRON PAINT AND VARNISH	WASTE PAINT - ALKYD TYPE II WALKWAY OLIVE DRAB	D001
W90WDF00553	8010013635974	AMERON INC	WASTE PAINT - AMERCOAT RESIN	D001
W90WDF00979	801000F006653	SHERWIN WILLIAMS	WASTE PAINT - B29 Y2 TRAFFIC MARKING PAINT	D001 D008
W90WDF00298	801000F032057	BIX MANUFACTURING	WASTE PAINT - BIX SPRAY ON STRIPPER	NON-RCRA
W90WDF00350	8010000STRIPPER	BIX MFG.	WASTE PAINT - BIX STRIPPER	D001
W90WDF00605	8010011449885	PRATT & LAMBERT	WASTE PAINT - BLACK POLYURETHANE COMPONENT A	D001 D035

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00978	8010002972101	FARWEST PAINT MFG	WASTE PAINT - BLACK STENCIL PAINT 37038	D001
W90WDF00355	8010002516495	CRAWFORD LABORATORIES	WASTE PAINT - CELLULOSE NITRATE LACQUER	D035
W90WDF00148	8010001605787	CSD INC	WASTE PAINT - CELLULOSE NITRATE LACQUER THINNER	D001 D035
W90WDF01258	8010001417838	COOPERS CREEK CHEM	WASTE PAINT - COATING COMPOUND	D001
W90WDF01206	8010000PAINT	LOCTITE	YELLOW(AEROSOL)	D018
W90WDF01317	8010001817568	CREST INDUSTRIAL CHEMICALS	WASTE PAINT - CREST PAINT STRIPPER #7	D001 D007
W90WDF01148	801000F054731	PPG INDUSTRIES	WASTE PAINT - DAR DELSTAR ACRYLIC ENAMEL	D035
W90WDF01300	8010000PAINT	DOL	WASTE PAINT - DOL ACCUM DRUM (AEROSOL)	D040
W90WDF01198	8010000PAINT	UNITED GILSONITE LABORATORIES	WASTE PAINT - DRYLOK LATEX BASE MASONRY WATERPROOFER	NON-RCRA
W90WDF00088	801000F052735	PPG INDUSTRIES	WASTE PAINT - DZ3 LT GRAY PRIMER-SURFACER	D035
W90WDF01305	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D035
W90WDF00896	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D035
W90WDF00169	8010000PAINT	ACCUMULATION	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D018
W90WDF00755	8010000PAINT	ACCUM DRUM HAZMART	WASTE PAINT - ENAMEL ACCUM DRUM	D001 D035
W90WDF00589	8010000PAINT	DOL PAINT	WASTE PAINT - ENAMEL ACCUM DRUM	D001
W90WDF01346	8010000PAINT	ACCUMALATION DRUMS	WASTE PAINT - ENAMEL ACCUM DRUM	D007 D008
W90WDF01243	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D035
W90WDF00102	8010000PAINT	ACCUMULATION	WASTE PAINT - ENAMEL ACCUM DRUM	D001
W90WDF00968	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D018
W90WDF01276	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D001
W90WDF01401	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D001 D007
W90WDF00252	8010000PAINT	ACCUMULATION	WASTE PAINT - ENAMEL ACCUM DRUM	D011 D018
W90WDF01150	8010000PAINT	ACCUM DRUM PAINT	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D018
W90WDF00996	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D018 D035
W90WDF01260	8010000PAINT	ENAMEL ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D035
W90WDF00861	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D005 D007
W90WDF00695	8010000PAINT	DOL CLASS IV YARD	WASTE PAINT - ENAMEL ACCUM DRUM	D001
W90WDF01123	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D018
W90WDF01391	8010000PAINT	ACCUM DRUM HAZMART	WASTE PAINT - ENAMEL ACCUM DRUM	D007 D008
W90WDF01301	8010000PAINT	ACCUM DRUM 2ND ACR	WASTE PAINT - ENAMEL ACCUM DRUM	D007 D008
W90WDF01072	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D001 D035
W90WDF00763	8010000PAINT	DPW WASTE PAINT	WASTE PAINT - ENAMEL ACCUM DRUM	D001 D035
W90WDF00069	8010000PAINT	ACCUMULATION	WASTE PAINT - ENAMEL ACCUM DRUM	D001
W90WDF01246	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D035
W90WDF01212	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D007 D008
W90WDF00283	8010000PAINT	ACCUMULATION	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D018
W90WDF01025	8010000PAINT	ACCUM DRUM HAZMART	WASTE PAINT - ENAMEL ACCUM DRUM	D007 D018
W90WDF01354	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D035
W90WDF00906	8010000PAINT	ACCUM DRUM	WASTE PAINT - ENAMEL ACCUM DRUM	D035
W90WDF00070	8010000PAINT	ACCUMULATION	WASTE PAINT - ENAMEL ACCUM DRUM	D001

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00488	801000PAINT	ACCUMULATION	WASTE PAINT - ENAMEL ACCUM DRUM	D008 D035
W90WDF01229	801000PAINT	ACCUM WASTE PAINT	WASTE PAINT - ENAMEL ACCUM DRUM	D007 D008
W90WDF00699	8010005985458	PRATT & LAMBERT	WASTE PAINT - ENAMEL PAINT, OLIVE DRAB	D001 D035
W90WDF00608	801000COATING	SHERWIN WILLIAMS	WASTE PAINT - EPOXY COATING KIT PART A AND PART B	D001 D035
W90WDF01175	8010006647077	STEVEN INDUSTRIES	WASTE PAINT - FILLER, WOOD, PLASTIC	D043
W90WDF00603	801000FILTER	TEST RESULTS	WASTE PAINT - FILTER(8300 BLOCK)	D001 D040
W90WDF00871	801000PAINT	SHERWIN WILLIAMS	WASTE PAINT - FLAT LATEX EXTERIOR A 100 PAINT	NON-RCRA
W90WDF00166	8010005151567	PRATT & LAMBERT	WASTE PAINT - GREEN LACQUER	D001 D008
W90WDF00614	801000COATING	HENTZEN COATING COMPANY	WASTE PAINT - GREEN ZENTHANE POLYURETHANE COATING	D001 D007
W90WDF01264	8010006647468	SENTRY	WASTE PAINT - HEAT RESISTANT	D001
W90WDF00052	801000PAINT	J&J	WASTE PAINT - J & J ACCUM DRUM	D001
W90WDF00951	8010001661700	PRATT & LAMBERT	WASTE PAINT - LACQUER BLACK 17038	D001 D035
W90WDF01098	8010002516501	LENMAR	WASTE PAINT - LACQUER CELLULOSE NITRATE, GLOSS ORANGE	D008
W90WDF00635	8010002516501	PRATT & LAMBERT	WASTE PAINT - LACQUER ORANGE 12197	D001
W90WDF00305	8010009357060	PRATT & LAMBERT	WASTE PAINT - LACQUER, ACRYLIC GRAY	D001 D035
W90WDF00631	8010006347320	GRIGGS	WASTE PAINT - LACQUER, RED #1136	D001 D035
W90WDF00762	8010008301822	GRIGGS PAINT	WASTE PAINT - LAQUER BLACK	D001 D035
W90WDF00068	801000PAINT	ACCUMULATION	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF00402	801000PAINT	ACCUMULATION	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01228	801000PAINT	ACCUM WASTE PAINT	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01026	801000PAINT	ACCUM DRUM HAZMART	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01404	801000PAINT	WASTE PAINT ACCUM DRUM	WASTE PAINT - LATEX ACCUM DRUM	REGULATED
W90WDF00357	801000PAINT	ACCUMULATION	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01061	801000PAINT	DOL WASTE PAINT	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF00356	801000PAINT	ACCUMULATION	WASTE PAINT - LATEX ACCUM DRUM	D035
W90WDF01051	801000PAINT	ACCUM DRUM LATEX	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF00894	801000PAINT	ACCUMULATION DRUM	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF00098	801000PAINT	ACCUMULATION	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01213	801000PAINT	ACCUM DRUM	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01277	801000PAINT	ACCUM DRUM	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF00888	801000PAINT	ACCUM DRUM	WASTE PAINT - LATEX ACCUM DRUM	NON RCRA
W90WDF00999	801000PAINT	ACCUM DRUM LATEX	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF00923	801000PAINT	ACCUMULATION DRUM	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01124	801000PAINT	ACCUM DRUM	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01303	801000PAINT	ACCUM DRUM 2ND ACR	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF00995	801000PAINT	ACCUM DRUM HAZMART	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01149	801000PAINT	ACCUM DRUM PAINT	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01348	801000PAINT	ACCUM DRUM	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF01247	801000PAINT	ACCUM DRUM LATEX	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF00487	801000PAINT	ACCUMULATION	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00170	801000PAINT	ACCUMULATION	WASTE PAINT - LATEX ACCUM DRUM	NON-RCRA
W90WDF00282	801000PAINT	ACCUMULATION	WASTE PAINT - LATEX DRUM LATEX	NON-RCRA
W90WDF01129	801000PAINT	KURFEES	WASTE PAINT - LO LUSTRE PAINT	D001
W90WDF01274	801000PAINT	LOCKHEED	WASTE PAINT - LOCKHEED ACCUM DRUM	D001 D035
W90WDF00040	801000PAINT	LOCKHEED	WASTE PAINT - LOCKHEED ACCUM DRUM	D035 F003
W90WDF00892	801000PAINT	LOCKHEED PAINT	WASTE PAINT - LOCKHEED ACCUM DRUM	D009 D030
W90WDF00758	801000PAINT	WASTE PAINT LOCKHEED	WASTE PAINT - LOCKHEED ACCUM DRUM	D035 F003,
W90WDF01062	801000PAINT	LOCKHEED WASTE PAINT	WASTE PAINT - LOCKHEED ACCUM DRUM	D001
W90WDF01345	801000PAINT	PERRY-AUSTEN BOWLING PRODUCTS	WASTE PAINT - MAJIC TRIANGLE LACQUER BASECOAT	D001
W90WDF01373	8010143600749	COURTAULDS AEROSPACE	WASTE PAINT - MASTINOX 6856 K YELLOW	D007
W90WDF00440	8010006647091	BAKER SEALANTS & COATINGS	WASTE PAINT - ODORLESS, ALKYD, INTERIOR FLAT P-30	D001
W90WDF01166	8010009590815	NELSON PAINT	WASTE PAINT - ORANGE SUPER-SPOT TREE MARKING PAINT	D001 D008
W90WDF00307	8010005152258	CREST INDUSTRIAL	WASTE PAINT - PAINT STRIPPER	D002 D007
W90WDF00016	8010001605800	CREST INDUSTRIAL CHEMICALS	WASTE PAINT - PAINT STRIPPER REMOVER	NON-RCRA
W90WDF00117	8010013611328	SAVOGRAN CO	WASTE PAINT - PAINT STRIPPER, STRIPEZE	D001
W90WDF00294	8010002422089	PUMA CHEMICAL	WASTE PAINT - PAINT THINNER/MINERAL SPIRITS	D001 D018
W90WDF00143	8010001817165	CHEMICAL COMMODITIES	WASTE PAINT - PHOSPHORESCENT LACQUER	D001
W90WDF00645	8010000822450	AKZO COATING	WASTE PAINT - POLYAMIDE PRIMER YELLOW	D001 D035
W90WDF00702	8010011316255	DEFT INC.	WASTE PAINT - POLYURETHANE (GREEN) COMPONENT A	D001
W90WDF00363	ANE	E.I. DUPONTE	WASTE PAINT - POLYURETHANE ACTIVATOR 192S	D018
W90WDF00256	8010001316254	NILES CHEMICAL	WASTE PAINT - POLYURETHANE ACTIVATOR COMPONENT B	D001
W90WDF00521	8010011316255	PRATT & LAMBERT	WASTE PAINT - POLYURETHANE COATING	D001 D035
W90WDF00023	8010012297540	HENTZEN	ZENTHANE	D001
W90WDF00832	8010012297546	HENTZEN	WASTE PAINT - POLYURETHANE COATING 383 GREEN	D001
W90WDF00105	8010012297540	HENTZEN	WASTE PAINT - POLYURETHANE COATING BLACK	D001
W90WDF00742	8010001412420	PRATT & LAMBERT	WASTE PAINT - POLYURETHANE COATING COMP B	D001
W90WDF00646	8010011412419	PRATT & LAMBERT	WASTE PAINT - POLYURETHANE COATING COMPONENT B	D001
W90WDF00353	8010011278908	PRATT & LAMBERT	WASTE PAINT - POLYURETHANE COATING COMPONENT B	D001
W90WDF01106	8010011449885	PRATT & LAMBERT	WASTE PAINT - POLYURETHANE COATING KIT PART A AND B	D001 D035
W90WDF01118	8010011316254	NILES CHEMICAL	WASTE PAINT - POLYURETHANE COATING PART A AND B	D001 D035
W90WDF00827	801000F007994	EVERSEAL MFG	WASTE PAINT - POLYURETHANE COATING PART B	D001
W90WDF01037	8010014416026	COURTAULDS AEROSPACE	WASTE PAINT - POLYURETHANE COATING(17038 GL BLACK)	D001
W90WDF00253	ANE	PRATT & LAMBERT	WASTE PAINT - POLYURETHANE COATING, ALIPHATIC PART B	D001
W90WDF00364	8010011449885	PRATT & LAMBERT	WASTE PAINT - POLYURETHANE COATING, BLACK 37038 PART B	D001 D035
W90WDF00104	8010012297544	HENTZEN	WASTE PAINT - POLYURETHANE COATING, BROWN	D001 D007
W90WDF00064	8010010421004	DEFT INC.	WASTE PAINT - POLYURETHANE COATING, CLEAR GLOSS	D001 D035
W90WDF00352	8010011278908	PRATT & LAMBERT	WASTE PAINT - POLYURETHANE COATING, COMPONENT A	D001 D035
W90WDF00076	8010012299561	HENTZEN	WASTE PAINT - POLYURETHANE COATING, GREEN 34094	D007
W90WDF00422	8010011412420	PRATTVILLE BUILDERS	A	D001 D035
W90WDF00062	8010012342934	HENTZEN	33303	D001 D007

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00701	8010011316255	DEFT INC.	WASTE PAINT - POLYURETHANE COMPONENT B	D001
W90WDF00606	8010011449872	PRATT & LAMBERT	WASTE PAINT - POLYURETHANE WHITE COMPONENT A	D001 D035
W90WDF00255	8010001316254	NILES CHEMICAL	WASTE PAINT - POLYURETHANE, BLACK, COMPONENT A	D001 D035
W90WDF01201	801000N010342	PARKS CORPORATION	WASTE PAINT - PRO STRIPPER	NON-RCRA
W90WDF01094	801000PAINT	SHERWIN WILLIAMS	WASTE PAINT - PROMAR 400 B31 W401 SEMIGLOSS LATEX PAINT	NON-RCRA
W90WDF00436	801000D007872	AMERON PROTECTIVE COATINGS	WASTE PAINT - PSX-700 RESIN	D007
W90WDF00612	801000PAINT	LOCTITE CORP.	WASTE PAINT - QUICK CURE PRIMER 4C-9500	NON RCRA
W90WDF00157	801000F023941	PARKS CORP.	WASTE PAINT - ROUGH 'N READY DEGLOSSER	D001
W90WDF01144	VE	VALSPAR	PRESERVATIVE	D001
W90WDF00607	8010012763640	HENTZEN COATINGS	WASTE PAINT - TAN ZENTHANE POLYURETHANE	D001
W90WDF00430	8010008377969	KLEAN STRIP	WASTE PAINT - THINNER	D001
W90WDF00371	801000F005702	KLEAN STRIP	WASTE PAINT - THINNER	D001
W90WDF00022	ANE	PPG INDUSTRIES	WASTE PAINT - TOP COAT (POLYURETHANE), MADE IN GERMANY	D001
W90WDF01070	8010009018081	ATLAS PAINT	WASTE PAINT - TT-P-29H, BUFF 33690 LATEX PAINT	NON-RCRA
W90WDF00087	8010006410427	AKRON PAINT & VARNISH	WASTE PAINT - TYPE II WALKWAY NONSLIP BLACK COATING	D001
W90WDF00591	801000F006390	SHERWIN WILLIAMS	WASTE PAINT - WEATHER PERFECT UNDERCOAT Y24W538	D001
W90WDF00014	801000N008084	MINWAX	(POLYURETHANE)	D001
W90WDF01136	8010008352114	SHERWIN WILLIAMS	WASTE PAINT - ZINC CHROMATE PRIMER YELLOW	D008
W90WDF01476	801000PAINT	ACCUM DRUM DOL	WASTE PAINT (AEROSOL ACCUMULATION DRUM)	D035
W90WDF01519	801000PAINT	ACCUMULATION DRUM	WASTE PAINT (ENAMEL)	D007 D008
W90WDF01545	801000PAINT	ACCUMULATION DRUM HAZMART	WASTE PAINT (ENAMEL)	D001
W90WDF01495	801000PAINT	ACCUM DRUM	WASTE PAINT (LATEX)	NON-RCRA
W90WDF01546	801000PAINT	ACCUMULATION DRUM HAZMART	WASTE PAINT (LATEX)	NON-RCRA
W90WDF01536	801000PAINT	ACCUM DRUM HAZMART	WASTE PAINT (LATEX)	NON-RCRA
W90WDF01472	801000PAINT	ACCUM DRUM	WASTE PAINT (LATEX)	NON-RCRA
W90WDF01437	801000PAINT	ACCUM DRUM	WASTE PAINT (LATEX)	NON-RCRA
W90WDF01518	801000PAINT	ACCUMULATION DRUM	WASTE PAINT (LATEX)	NON-RCRA
W90WDF01389	801000PAINT CHIPS	DCFA	WASTE PAINT CHIPS	D008
W90WDF00907	801000PAINTDEB	LOCKHEED MARTIN	WASTE PAINT DEBRIS	NON RCRA
W90WDF00041	DEBRIS	LOCKHEED	WASTE PAINT DEBRIS	D035 F005
W90WDF01428	801000PAINT	ACCUM DRUM	WASTE PAINT ENAMEL	D007 D008
W90WDF01427	801000PAINT	ACCUM DRUM	WASTE PAINT LATEX	NON-RCRA
W90WDF00735	8010011930516	HENTZEN COATINGS INC	WASTE PAINT - MIL-P-53022B, TYPE I CATALYST PART B	D001 D035
W90WDF00024	801000PAINT	DOL PAINT SHOP	WASTE PAINT RELATED MATERIAL (THINNER)	D035 F003
W90WDF01499	801000PAINT	ACCUM DRUM	WASTE PAINT(LATEX)	NON-RCRA
W90WDF01426	8010009003648	GRIGGS PAINT	WASTE PAINT, TT-P-115F TYPE I YELLOW 33538, P/C 500W15	D001
W90WDF01417	801000PAINT	ACCUM-DRUMACCUM DRUM	WASTE PAINT-LATEX ACCUM DRUM	NON-RCRA
W90WDF01434	801000PAINT	RANGE MAINTENANCE	WASTE PAINT-LATEX ACCUM DRUM	NON-RCRA
W90WDF01299	801000PAINT	ACCUM DRUM	WASTE PANT - ENAMEL ACCUM DRUM	D007 D008
W90WDF01470	915000POL	ACCUM DRUM 8300 BLOCK	WASTE POL	D008 D031

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Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF01420	913000POL	8300 BLOCK ACCUM DRUM	WASTE POL	D008 D010
W90WDF01339	915000POL	ACCU8M DRUM 8300 BLOCK	WASTE POL	D040
W90WDF01525	915000POL	ACCUMULATION DRUM	WASTE POL	D039 D040
W90WDF01543	915000POL	DPW 8300 BLOCK	WASTE POL (AEROSOL ACCUMULATION DRUM)	D008 D039
W90WDF01477	915000POL	ACCUM DRUM DOL	WASTE POL (AEROSOL ACCUMULATION DRUM)	D039
W90WDF01433	913000POL	ACCUM DRUM DOL AECOM MAINTENANCE	DRUM	D031 D039
W90WDF00172	915000SEMISOLID	TEST RESULTS	WASTE SEMISOLID TAR-LIKE SUBSTANCE	NON-RCRA
W90WDF00155	999900SPILL	TEST RESULTS	WASTE SEMI-SOLID(TAR LIKE)FROM AAFES	NON-RCRA
W90WDF01488	681000SOLVENT	INLAND	WASTE SOLVENT	NON-RCRA
W90WDF01487	681000SOLVENT	INLAND	WASTE SOLVENT	NON-RCRA
W90WDF01429	681000SOLVENT	546TH MAINTENANCE	WASTE SOLVENT	NON-RCRA
W90WDF00869	913000POL	ACCUM DRUM DOL	WASTE TOXIC LIQUID	D019 D028
W90WDF00757	6810007534787	BJACH	WASTE XYLENE	D001 F003
W90WDF01415	804000COMPOUND	W.R. MEADOWS INC.	WATER BASED CLEAR CURING COMPOUND	NON-RCRA
W90WDF00055	6850009857166	VAN BEN INDUSTRIES	WATER PURIFICATION TABLET, IODINE	NON-RCRA
W90WDF00373	803000F013752	THOMPSON	WATER REPELLANT SEALER	D001
W90WDF01377	680000ASBESTOS	DPW	WATER/SEWER PIPE CONTAINING ASBESTOS	NON-RCRA
W90WDF01105	804000ADHESIVE	OSI	WATERPROOF TILEBOARD ADHESIVE	D001
W90WDF01167	7930001856758	CHEMSCOPE	WAX SPRAY, REFINISH	D001 D003
W90WDF00971	7930001325582	BARRIER INDUSTRIES	WAX, GENERAL PURPOSE, SOLVENT, TYPE I	D001
W90WDF00517	803000HMC0009	MIDLAND CHICAGO	WEATHER MASTER WATER REPELLANT	D001
W90WDF00622	871000FERTILIZER	RHONE-POULENC AG COMPANY	WEEDAR BRAND 64 BROADLEAF HERBICIDE	NON RCRA
W90WDF01384	3489002554580	L.B. ALLEN CORP.	WELDING FLUX	NON-RCRA
W90WDF01143	3439010444144	R&D	WELDING FLUX, SOLDERING LIQUID FORM FLUX	D002
W90WDF01043	8040010042705	IPS	WELD-ON PRIMER P-70	D001 D035
W90WDF01176	804000N003366	ROBERTS CONSOLIDATED INDUSTRIES	WELDWOOD WATERPROOF RESORCINAL	NON-RCRA
W90WDF00965	6665011340885	TRUETECH DEMIL ITEM	WHITE BAND SIMULANT TUBE(M272 KIT)	U279
W90WDF01103	804000ADHESIVE	WILSONART	WILSONART 500(LOKWELD 500)	D001
W90WDF01197	6850009262275	CONTINENTAL CHEMICAL	WINDSHIELD CLEANER	D001
W90WDF00354	804000ADHESIVE	DAP	WOOD DOUGH	D001 D035
W90WDF00467	6550007644729	JT BAKER CHEMICAL	WRIGHT-GIEMSA STAIN	D001 U154
W90WDF00654	2640001388324	TRUFLEX RUBBER	XC RAPID CLEAN BUFFING SOLUTION	D001
W90WDF00435	6850014143520	XEROX	XEROX FUSER AGENT 8R3903(5046)	NON-RCRA
W90WDF01115	8040000660694	RH PRODUCTS	XL-8 ALL PURPOSE CEMENT	D001
W90WDF01352	8030006167694	X-PANDO PRODUCTS	X-PANDO PIPE JOINT COMPOUND	NON-RCRA
W90WDF00293	6810007534787	BJACH	XYLENE	D001 U239
W90WDF01182	6810001388414	MALLINCKRODT INC	XYLENE	D001 U239
W90WDF00662	6810007534787	BIOCHEMICAL SCIENCES INC.	XYLENE	D001 U239
W90WDF00964	6665011340885	TRUETECH DEMIL ITEM	YELLOW BAND SIMULANT TUBE(M272 KIT)	D001 U041
W90WDF00656	7930014122388	ZEP	ZEP FLOOR FINISH	NON-RCRA

Section

Number	NSN	MANUFACTURER	WASTE TYPE	CODES
W90WDF00463	685000SOLVENT	TEST RESULTS	ZEP SOLVENT PARTS WASHER	D002 D006
W90WDF00123	2910006469727	PHILLIPS TEMRO	ZEROSTART STARTING FLUID	D001
W90WDF01295	6135015000572	ELECTRIC FUEL CORPORATION	ZINC AIR BATTERY	WASTE
W90WDF01203	8030006644968	BAKERS SEALANTS	ZINC CHROMATE PUTTY, X-934	D007
W90WDF01126	650500ZINC	MALLINKRODT BAKER	ZINC METAL POWDER	D003 D008
W90WDF00575	6505001501000	MALLINKRODT	ZINC OXIDE	NON-RCRA
W90WDF00576	6505001501000	MALLINKRODT	ZINC OXIDE	NON-RCRA
W90WDF01458	681000ZINC	FISHER SCIENTIFIC	ZINC SULFATE HEPTAHYDRATE	D002
W90WDF01465	801000STRIPPER	ACROS ORGANICS N.V.	ZIP-STRIP PAINTREMOVER	NON-RCRA
W90WDF01379	684000INSECTICIDE	WELLMARK	ZOECON ALTOSID BRIQUETS	NON-RCRA
W90WDF01041	6850011210949	MAGNAFLUX	ZP-4B ZYGLO DRY DEVELOPER	NON-RCRA





## Fact Sheets and Information Papers

### Classification of Expired Pharmaceuticals

March 2005

**1. BACKGROUND:** Pharmaceutical products are turned in to a reverse distributor from a dispensing facility (clinic, hospital, medical center, etc.) for many reasons: oversupply, recall, damaged shipment, or product expiration. Some returned pharmaceuticals have a monetary value and the pharmaceutical manufacturer may give credit to the facility. Some expired pharmaceuticals are classified as hazardous wastes (HW) under the Resource Conservation and Recovery Act (RCRA) when disposed or intended for disposal.

**2. DISPOSAL:** The regulatory issue surrounding expired pharmaceutical disposal is who classifies the item as hazardous or non-hazardous waste. The RCRA regulations in 40 CFR 262.11 require a generator to determine whether an item is a waste, and if it is a waste, whether it needs to be classified as a HW or a non-hazardous waste. The issue for the military medical department is whether the dispensing facility or the reverse distributor (who might be able to give monetary credit for the value of the items) should make the HW determination. The answer to this question is not uniformly consistent throughout the U.S. The paragraphs below provide state-specific guidance.

**3. REGULATORY OPINION:** After communicating with all State environmental regulatory offices to obtain State specific guidance on this issue, the following states responded that military dispensing facilities (clinics, hospitals, medical center, etc.) are the waste generators and must make a waste determination of their expired pharmaceuticals:

Connecticut, Georgia, Kentucky (with the exception for Ireland Hospital), Missouri, New Mexico, New York, Oklahoma, South Carolina, West Virginia.

This means that dispensing facilities located in these states **may not** return expired pharmaceuticals determined to be HW to a reverse distributor. In the case of Georgia, a HW determination must be made based on the [“Hazardous Waste Management Guide for Georgia Hospitals, September 2003”](#).

Expired pharmaceuticals that are determined **not** to be a HW can be returned to a reverse distributor. Dispensing facilities should contact medical logistics or USACHPPM at 1-800-276-MIDI or DSN 584-3651 for assistance in making waste determinations. Once it is determined that an expired pharmaceutical is a HW, it must be turned in through military channels for proper disposal. The installation Environmental Office or the Preventive Medicine Environmental Science Officer may also provide assistance in this matter.

**4. ADDITIONAL INFORMATION:** Military dispensing facilities in the states listed in Paragraph 3 should consider the value of returning products through reverse distributors **prior to** their expiration date (before they become a waste).

**5. ASSISTANCE:** Dispensing facilities may contact USACHPPM at 1-800-276-MIDI or DSN 584-3651 for additional assistance.

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## OPERATOR'S LEVEL SOP

### **RECYCLING USED ANTIFREEZE USING COOL'r CLEAN'r PURIFICATION SYSTEM and BE-55C ANTIFREEZE RECLAIMER**

#### **1. GENERAL:**

One of the top ten chemicals found in the Toxic Release Inventory is ethylene glycol. Because of this statistic, the United States Army has established a reduction goal for ethylene glycol disposal of 100%. One method of accomplishing this goal is to recycle used antifreeze. Due to Executive Order 12856, which calls for improved recycling and reductions in waste generation, the Mobility Technology Center-Belvoir (MTCB), the qualifier for petroleum, oils, and lubricants within the DOD, approved two antifreeze recycling systems. The two systems that meet the specifications of MIL-A-46153 are the **KFM Corporation Cool'r Clean'r Coolant Purification System (CCCPS) and the Finish Thompson BE-Series Coolant Reclaimer System**. The CCCPS uses an ion exchange process and the Finish Thompson unit is a vacuum distillation process.

To comply with Executive Order 12856 and to meet the Army's reduction goal of ethylene glycol, the Fort Polk Environmental Office fielded both systems to manage the used antifreeze generated on the installation, both of which are located at the HAZMART (Building 4369).

#### **2. APPLICATION:**

This operating procedure is directed at authorized personnel within the Fort Polk Environmental office who process used antifreeze with either the KFM Cool'r Clean'r Purification System or the BE-Series 55C Coolant Reclaimer. Changes to this SOP are not official unless authorized by the Fort Polk Environmental Compliance Management Branch.

##### **a. COLLECTION OF USED ANTIFREEZE:**

1. Used antifreeze is collected throughout the installation in dedicated plastic, 55-gallon drums labeled "USED ANTIFREEZE", which are managed by the assigned Environmental Customer Service Technician (ECST) for each unit or activity generating the antifreeze.
2. Once a drum is full, the unit's ECST is responsible for replacement of the drum with an empty one, transporting the full drum to the installation's HAZMART, and marking the drum with the generating unit's information. HAZMART personnel will sample the antifreeze for its freezing point and mark the results on the side of the drum.
3. HAZMART personnel will evaluate each drum of used antifreeze for the proper treatment option. Used antifreeze with a freezing point above -10°F will be processed in the distillation unit and antifreeze with a freezing point below -10°F will be processed through the CCCPS.

## OPERATOR LEVEL SOP (CON'T)

4. Oils and lubricates are removed either by skimming from the top of the holding container or soaked up during the settling stage by using absorbent pads designed for removal of such product.

5. A sample of the used product is collected to check the freezing point protection level to determine if the product is suitable for recycling. The recommended freezing point protection level for used antifreeze of -7F degrees or lower. **Note:** It has been found at lower protection levels, more inhibited product (**New Antifreeze**) must be added to the end product to produce a batch within required specifications.

### **b. PREPARING COOL'R CLEAN'R FOR OPERATION:**

For first time users of the KFM Cool'r Clean'r Purification System, (**See Attachment "B"**) the following procedures for re-priming the system are recommended. (**Re-priming is required each time the ION tanks are replaced**)

**NOTE:** Before used ION tanks can be shipped for re-charging they must be flushed of all residue, debris and water. Items needed to accomplish this are an air-compressor, empty plastic 55-gallon drum, and container of 15 to 20 gallons of pure water. (**Machine must be turned OFF before flushing process begins**)

**a. Flush & Remove ION tanks by:** Placing inlet hose into container of 15 to 20 gallons water, and outlet hose into used antifreeze container or empty 55-gallon drum. Turn unit on by pressing "**On/Off**" and "**Process/Pump**" switches. Allow machine to operate until liquid from outlet hose is clear. Attach air-compressor to flush the water remaining within the tanks. (**SEE ATTACHMENT "C" & "D"**)

**NOTE:** (**Unplug Cool'r Clean'r from power outlet while attaching the air-compressor to unit.**)

1. Remove Inlet hose from front of unit and replace with special Quick-Connect hose.
2. Attach air-compressor hose by use of Quick-Connect, and insure all connections are secure.
3. Outlet hose remains in 55-gallon drum throughout flushing process, due to it will be under pressure by air generated into hose line.

#### **Plug air-compressor and Cool'r Clean'r unit into power out-lets**

4. Turn on Cool'r Clean'r system by pressing the "**On/Off**" and "**Process/Pump**" switches and also the air-compressor. Monitor the pressure gage on the Cool'r Clean'r unit to insure it has a PSI (Pounds per Square Inch) reading of 45 to 55. This pressure reading can be adjusted by increasing or decreasing the pressure on the air-compressor.
5. Once all water is flushed from ion tanks, which is determined by lack of water at outlet hose, turn off air-compressor and allow Cool'r Clean'r to continue running

## OPERATOR LEVEL SOP (CON'T)

until PSI gage reads 5 or less. This indicates the tanks are no longer under pressure and can be removed safely. Once PSI reaches proper reading turn off machine.

6. Open machine's rear access panel so ION tanks are accessible by unlatching security bolts.
7. Slowly remove inlet and outlet hoses connected to the tops of each tank, (**This is to prevent any liquids from being spilled for some air will remain inside tanks after flushing process is complete**) by working brass connection of hose back-and-forth and pulling toward rear of machine.
8. After all hoses have been removed unstrap security strap holding ion tanks in place and remove tanks by tilting backward and allowing bottom to slid to the floor.
9. The **NEW** ion tanks are replaced in the opposite manner in which they were removed; insuring the ANION tank is placed on the left and CATION tank on the right side of the machine.
3. **PRIMING THE COOL'R CLEAN'R PURIFICATION SYSTEM:** Unit can be primed by using 5 to 7 gallons of a water/ethylene glycol mixture containing 50% - 60% ethylene glycol (EG). This mixture of EG will provide a -20f to -34f degree freeze protection level and can be obtained from used antifreeze, new (inhibited) antifreeze or virgin (uninhibited) ethylene glycol, as long as the priming solution is 50% to 60% EG. (**NEW (inhibited) MIL-A-46153 antifreeze is used to obtain this 50% - 60% mixture, which produces a -20f to 34f degree, freeze protection level**) ( SEE ATTACHMENT "E" )

**NOTE:** ION TANKS ARE SHIPPED FILLED WITH WATER TO PRESERVE RESIN

- (a) **Priming Cool'r Clean'r with NEW (inhibited) MIL-A-46153 antifreeze; Flush ION tanks in same manner as covered under section 2a (Preparing Cool'r Clean'r for Operation) without placing inlet hose into container of clear water.** Once water is removed from tanks they are primed in the following manner:
  - 1a. Place inlet and outlet hoses into 5 to 7 gallons of used antifreeze (with freeze protective level of -34F degree or higher), New antifreeze, or Virgin ethylene glycol.
  - 2a. Turn unit's **ON/OFF** and **PROCESS/PUMP** switches to the ON positions. Allow machine to run until fluids from out-let hose turn as clear as water.
  - 3a. Periodically sample fluids from outlet hose to determine freeze point protection reading, until freeze protection level reaches **-20F to -34F degrees**
  - 4a. Place outlet hose in clean 55-gallon drum and inlet hose into used antifreeze holding drum.

### OPERATOR LEVEL SOP (CON'T)

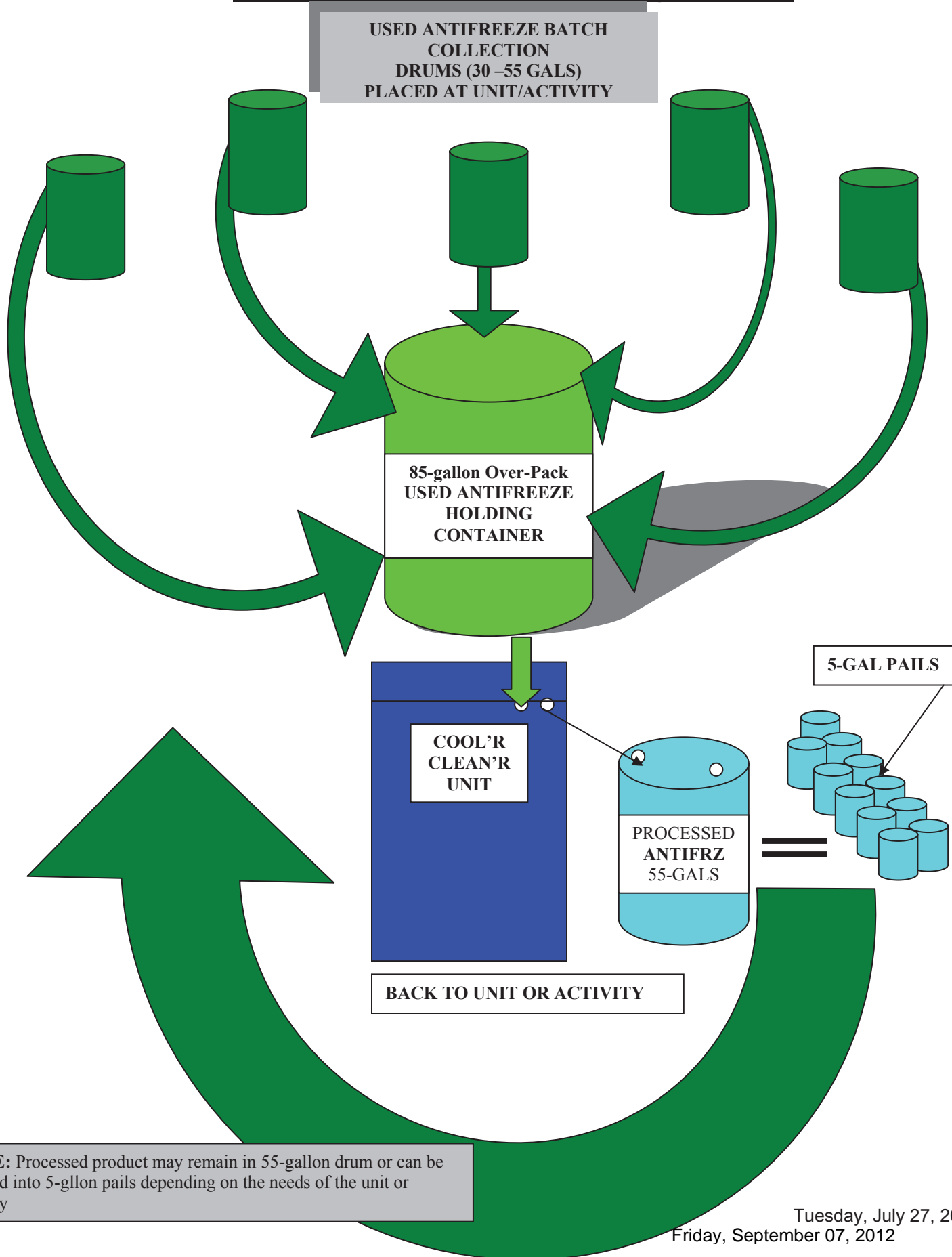
- 5a. While fluid is being processed into 55-gallon drum, inhibitors "A" and "B" can be added (200 Ounces of each) to make mixing process easily.

**NOTE:** Inhibitor "A" raises pH and "B" lowers pH.

- 6a. Once 50 gallons of recycled antifreeze is processed into the 55-gallon drum test product to insure it meets specifications. (pH of 9 or higher with protection level of -34F) **NEW antifreeze or Inhibitor may need to be added to END product to reach required protective reading or pH level.** Once specifications are met continue to fill drum.

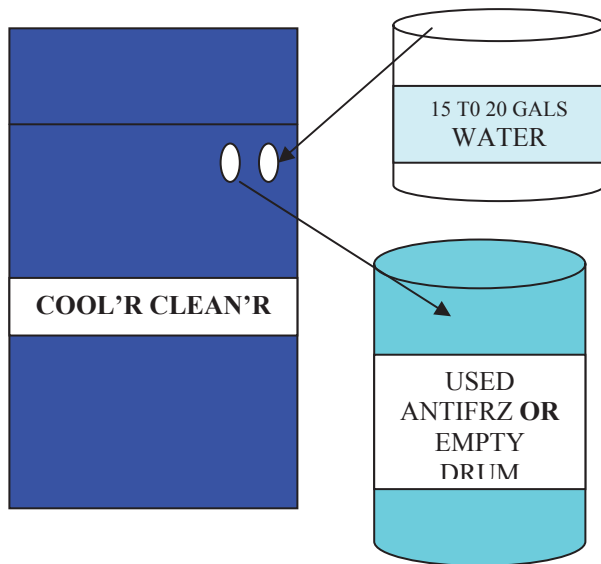
**OPERATOR LEVEL SOP (CON'T)**

**ATTACHMENT "A" (Batch Processing Procedure)**



## OPERATOR LEVEL SOP (CON'T)

### ATTACHMENT "C" FLUSHING ION TANKS

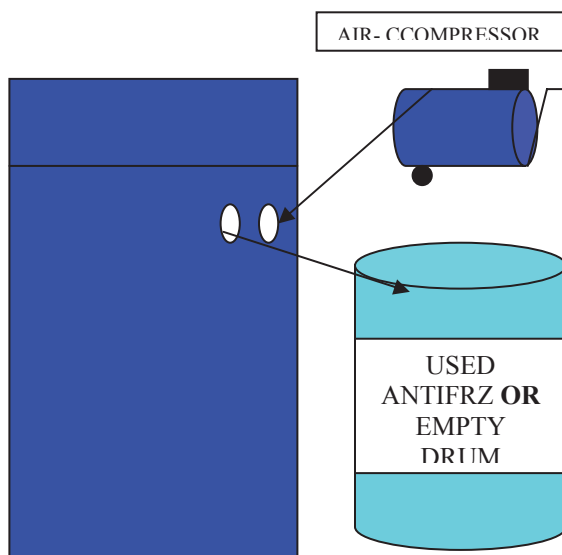


**STEP 1.** PLACE INLET HOSE INTO WATER AND OUTLET HOSE INTO EMPTY DRUM **OR** USED ANTIFREEZE CONTAINER.

**STEP 2.** TURN **ON/OFF** AND **PROCESS/PUMP** SWITCHES TO THE ON POSITIONS.

**STEP 3.** ALLOW COOL'R CLEAN'R TO RUN UNTIL FLUID AT OUTLET HOSE BECOMES CLEAR.

**NOTE:** ONCE FLUID IS CLEAR AIR COMPRESSOR CAN BE ATTACHED.



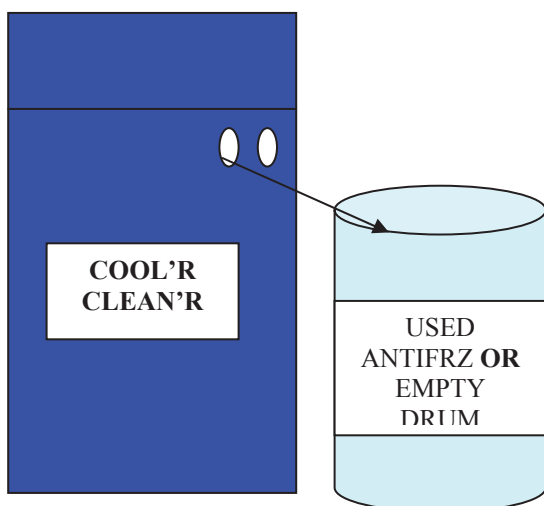
**STEP 4.** ATTACH AIR-COMPRESSOR BY REPLACING INLET HOSE WITH SPECIAL QUICK-CONNECT HOSE AND ATTACHING TO AIR-COMPRESSOR.

**NOTE:** OUTLET HOSE REMAINS IN COLLECTION CONTAINER.

**STEP 5.** PLUG IN COMPRESSOR TO POWER OUTLET.

**STEP 6.** TURN ON COMPRESSOR AND COOL'R CLEAN'R UNIT AND ADJUST AIR TO 50-55 PSI.

**STEP 7.** STOP PROCESS ONCE THERE IS NO LONG FLUID COMING FROM OUTLET HOSE. (**INDICATING ION TANKS ARE FLUSHED OF ALL LIQUIDS**)



**STEP 8.** THE LAST STEP IN FLUSHING THE ION TANKS IS TO REMOVE COMPRESSOR FROM INLET HOSE AND ALLOW COOL'R CLEAN'R TO RUN UNTIL PRESSURE ON MACHINE READS ABOUT 5 PSI. AT THIS TIME THE MACHINE CAN BE TURNED OFF AND ION TANK CAN BE REMOVED SAFELY. (**REMEMBER INLET HOSE IS NOT ATTACHED TO ANYTHING DURING THIS STEP AND UN-PLUG POWER CORD TO COOL'R CLEAN'R ONCE PROCESS IS COMPLETE**)



MCXV-PMS (40)

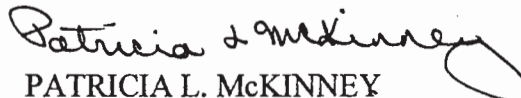
21 August 2000

MEMORANDUM FOR Directorate of Public Works, Environmental/Natural Resources  
Management Division, **ATTN: Dr. Christine Hull**,  
Fort Polk, Louisiana 71459-0000

SUBJECT: Air Sampling – Solvent Distiller, Building S-14.

1. On 12 July 2000, Industrial Hygiene staff conducted air monitoring on the solvent distilling process in building S-14. Samples were collected over a twenty-four hour period and analyzed for aromatic petroleum distillate vapor (APD). Results of analysis indicate only trace levels of APD (less than 0.05 parts per million).
2. Additional bulk samples (air and liquid) must be collected to identify the exact chemical constituents of the final product before a determination can be made as to whether a respiratory protection program (RPP) is required for employees who work in this area. In the interim, we recommend that a RPP be initiated for employees who work with the distilling process. Tuesday, July 27, 2010
3. As previously discussed, we concur with your recommendation of installing an activated charcoal filter in the building's exhaust system. This should reduce the noxious odor emitted from the process and reduce complaints from occupants of adjacent buildings. Operating the distiller during non-duty hours (if possible) would also help in reducing complaints.
4. Questions or comments concerning this memorandum should be addressed to James W. Dean, Chief, Industrial Hygiene or Mike Husband, extension 531-2630.

FOR THE COMMANDER:

  
PATRICIA L. McKINNEY  
MAJ, AN  
Chief, Preventive Medicine  
Service

CF:  
Installation Safety



Section:

<b>FRED HARTZELL</b>	<b>BILL GENTRY</b>	<b>TERRY COOK</b>	<b>MICHAEL FOSTER</b>	<b>SCOTT VICK</b>	<b>DON WILLIAMS</b>	<b>IRA CRAWFORD</b>
531-8131 CELL: 208-9382	531-1504 CELL: 208-7348	531-4766 CELL: 208-3895	531-4138 CELL: 208-3890	531-7311 CELL: 208-3876	531-8701 CELL: 208-3887	531-2815 CELL: 208-3879
4th BDE 10th MTN Division	HQ BDE 2-4 INF 3/89 CAV RSTA	DOL G3/DPTMS US AAD	ISB AAFES COMMISSARY CORPS OF ENGINEERS	FORSCOM (MAINT) CONTRACTORS MEDDAC	WB 519TH MP 509TH INF  NCO ACADEMY ED CENTER	DPW DMWR ECS-17
5/25 FA BTB G-94TH BSB						
4/6 AVN DTS DOIM MATES 71 Air Force Units SF-SOT-D	2/30 INF 94th BSB	OPS GP		DENTAC PICERNE TMDE SUPPORT CENTER		

## APPENDIX F

*(The proponent of this form is DPW, Environmental and Natural Resources Management Division)*

[illegible]

Section:

STORM-WATER AND SATELLITE ACCUMULATION POINT WATER RELEASE LOG										BLDG #		
CATCHMENT BASIN OR SAP RELEASE VALVE										YES	NO	N/A
Is containment system equipped with a way in which to drain storm water?												
If equipped with drain valve, is it serviceable? If "NO" indicate latest work order # to have repairs done. Work Order # _____ Date submitted: _____												
Are the signs of POL products (I.E.. oil, gas, diesel, paint, or JP-8) mixed in the water? If "YES" contact facility's ECST. Actions taken by ECST (I.E.. skimmed, pumped or drained). <b>circle what applies.</b>												
Was water pumped out?												
How was water pumped out? _____ Give Service Order # _____ Date: _____												
Approximate amount in gallons: _____												
ECO Initials / Amount Released / Date Of Release.												
<i>Date</i>												
<i>INT</i>												
<i>Amount Released</i>												
<i>Containment System ID Number</i>												
<i>Date</i>												
<i>INT</i>												
<i>Amount Released</i>												
<i>Containment System ID Number</i>												

## APPENDIX MM

### ENTERGY SAMPLE DESIGN SPECIFICATION

This packet contains information concerning the electrical facilities being installed at Ft. Polk where Entergy will be acquiring the facilities.

Included in this information is an Entergy drawing of a typical 3-phase riser with part descriptions, vendors and part numbers. Entergy requests risers to be built in the manner pictured in the drawing, observing the proper clearances. We also request switches be installed that are of the type or interchangeable with the type listed.

Also included are conduit information and pull-box descriptions. Entergy requests the minimum requirements are met and a spare conduit be installed with the primary conduit from the pole to the transformer.

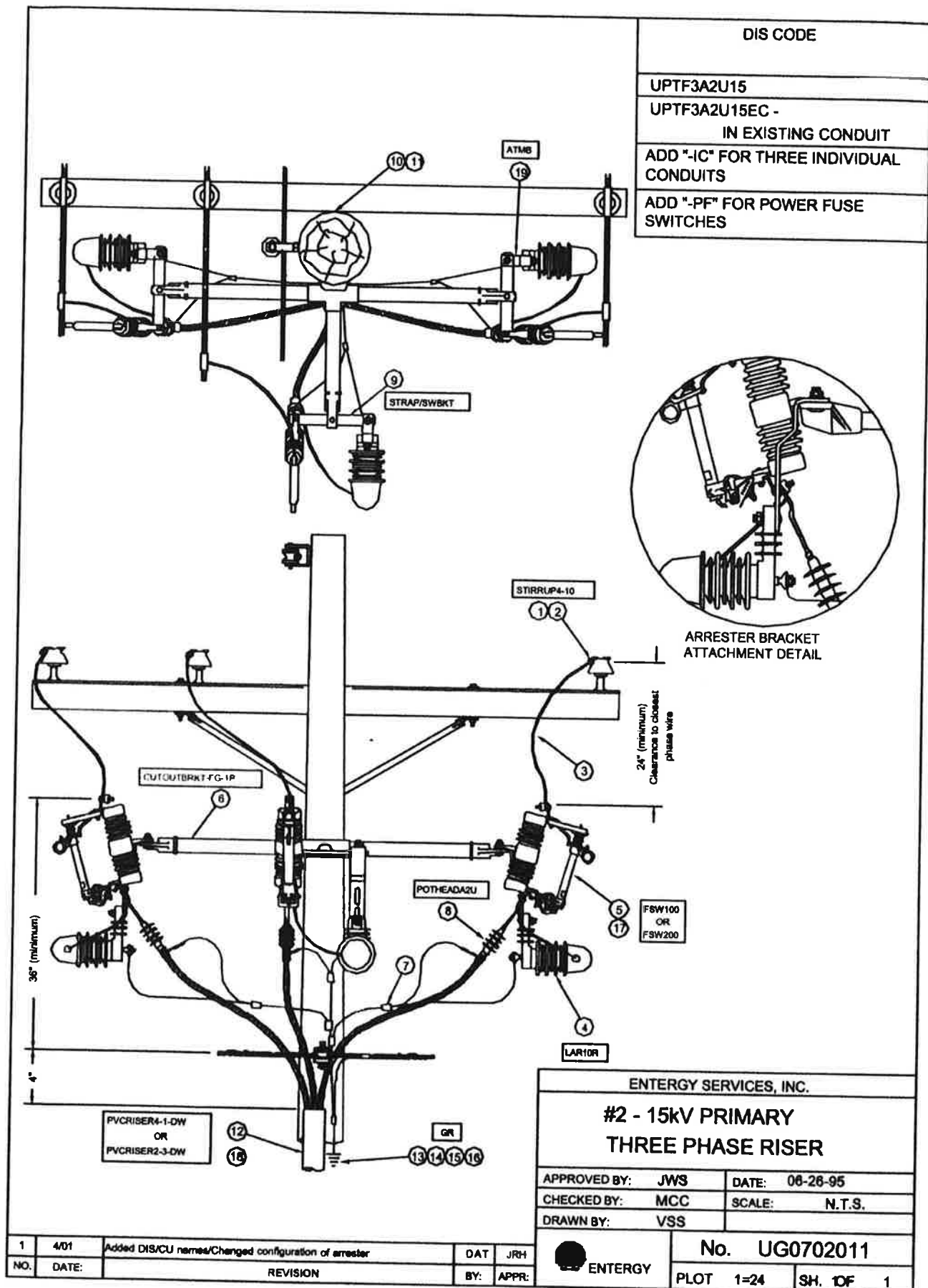
Conductor specs are included along with vendors and some descriptions. The information for copper conductors is limited because Entergy practices call for the common use of aluminum conductors, but we request conductors meet or exceed our specs.

Specs for pad-mount transformers are included and Entergy requests these specs be met or exceeded. Vendor names and contact information are attached for vendors that are familiar with our transformers and we encourage the purchasing of transformers that are of the type we use. Information on the primary elbows we use for connection to the transformer is also included, along with specs for the transformer pad.

Metering information is also included, consisting of meter base specs, description, vendors and part numbers; current transformer descriptions, vendors and part numbers; and potential transformer description, vendor and part number used on 277/480 volt applications. Entergy also requests no fuses be installed in the wiring for the meter.

For questions contact:

David Christian  
[dchris1@entergy.com](mailto:dchris1@entergy.com)  
318-329-5518



## Riser equipment manufacturer and part numbers from #2-15kv riser drawing.

### Item 4 - Arrestor

PURCHASE DESCRIPTION	MANUFACTURER	CATALOG NUMBER
Arrestor, for protection of 15KV underground distribution systems and equipment, riser pole type for terminal pole installation, heavy duty distribution class MOV, 10KV duty cycle rated, polymeric housed, having maximum discharge voltage of 28.1KV at 10kA, with insulating mounting bracket, with ground lead isolator, but without top terminal cap.	Ohio Brass Cooper Cooper Joslyn GE	221609-7214 URS1005-0A1A-1A1A URG1005-0A1A-1A1A ZRP010-000000 9L27AXX010XH

### Item 5 - Cutout switch

PURCHASE DESCRIPTION	MANUFACTURER	CATALOG NUMBER
Cutout, distribution, 27kV, 100 ampere, 125 kV BIL, 12,000 ampere RMS asymmetrical interrupting rating (ANSI 3 shot @ 27 kV), 16,000 ampere one-shot @15 kV, interchangeable fuse holder, fuse barrel w/solid cap and arc extension rod, non-hygroscopic arc extinguishing material in fuse barrel, loadbuster hooks. tin-plated bronze PG clamp connectors having a range of #6 solid through 250 MCM stranded, in accordance with ANSI C37.42-latest revision and tested in accordance with IEEE C37.41- latest revision <b>Application Information:</b> Intended for standard use on 15, 25, & 35kV systems. This item replaces EN003487 & EN003489 in most applications.	S&C ABB Chance	89032R10-D X2NCNNMM12 C710213P

### Item 6 - Switch bracket

Material Description	Manufacturer	Catalog Number
Bracket, cutout, triple, fiberglass, center cutout mounting hole 18" from face of pole and outside cutout mounting holes 48" apart, 1-1/2" diameter fiberglass, galvanized iron or high strength aluminum alloy end fittings,	MACLEAN PWR JOSLYN HUGHES	G3MA024818ACB 7510-548-18CB CF670B-48-18CB

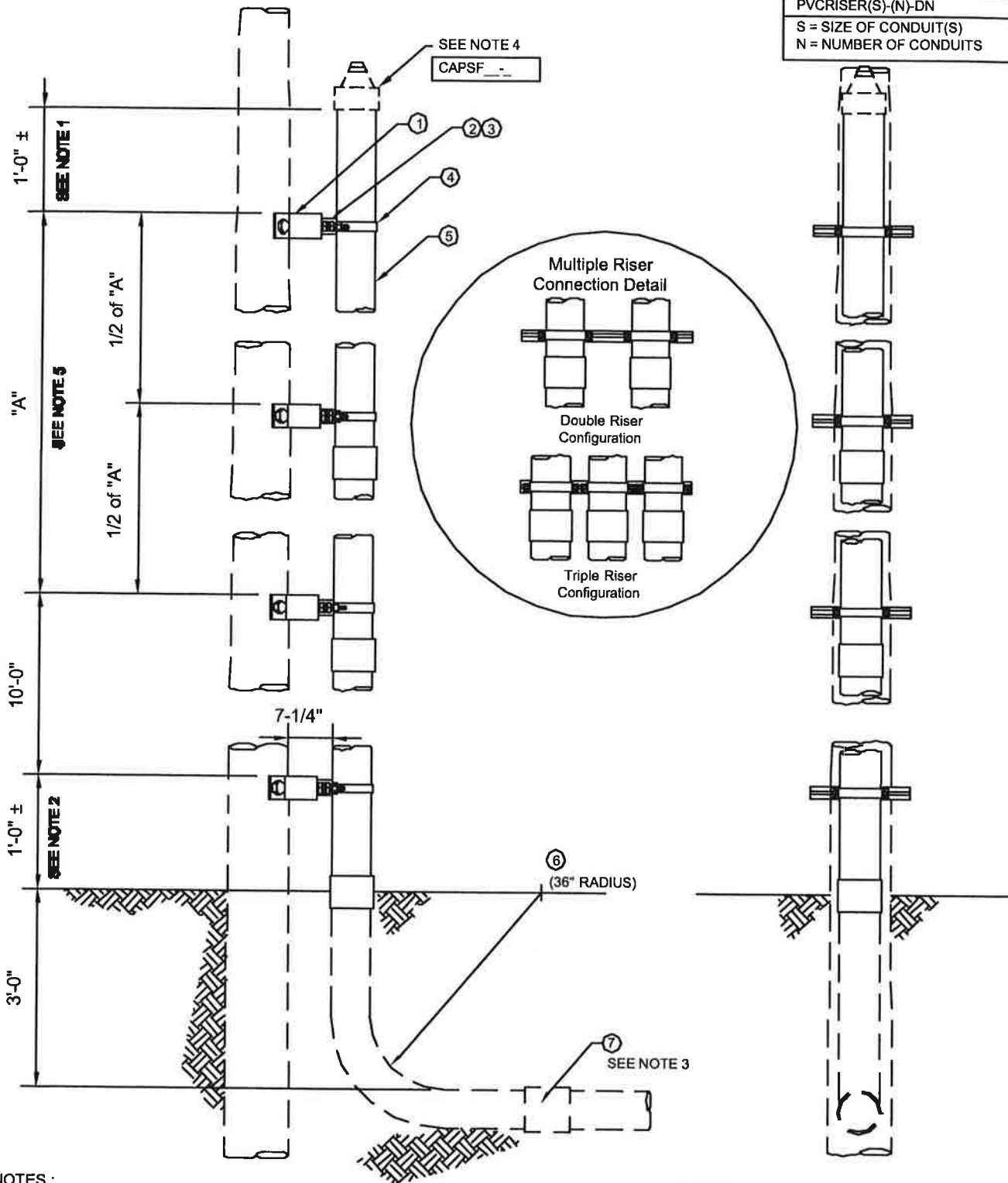
### Item 8 – Pothead

Material Description	Manufacturer	Catalog Number
Terminator, Cable, Outdoor, 15kV, #2-2/0 AWG Compressed AL/CU, Insulation O.D.: 0.64" - 1.12", Jacket O.D.: 1.35" maximum. Additional Information: 175 or 220 mil insulated cable. In accordance with the latest revision of IEEE Standard 48 for Class 1 termin	3M Joslyn Raychem	5641 JPT15J1 TFT-151

Pin needs to be for specific wire size for application. Below is an example.

Material Description	Manufacturer	Catalog Number
Connector, Pin Terminal, for #2 and #1 AWG stranded AL or CU conductor. Consists of aluminum alloy compression body, prefilled with non-petroleum based oxide inhibitor and capped, factory compressed to a minimum 12" long, 1/4" or #2 AWG bendable tinned solid	Anderson Eritech Homac	PTH-22-12OA PTL-22-12 SAPT-2-12

PVCRISER(S)-(N)-DN  
 S = SIZE OF CONDUIT(S)  
 N = NUMBER OF CONDUITS

**NOTES:**

- 1) INSTALL UPPER BRACKET AND CONDUIT AS REQUIRED TO FIT OVERHEAD FACILITIES.
- 2) INSTALL LOWER BRACKET AS NEEDED TO STABILIZE 36" CONDUIT BEND.
- 3) USE COUPLING FOR UNDERGROUND IN CONDUIT INSTALLATIONS ONLY.
- 4) USE A MOLDED RUBBER CAP TO KEEP WATER, INSECTS, RODENTS, AND DIRT OUT OF THE PVC RISER. NOT INCLUDED IN MACRO, SEE DRAWING UG0706051 FOR CORRECT UNIT.
- 5) DIMENSION "A" IS DIVIDED IN HALF TO GIVE PLACEMENT OF THE SECOND BRACKET.
- 6) SEE DRAWING UG0706061 FOR WOOD POLE CONDUIT BRACKET ASSEMBLY.

ENTERGY SERVICES, INC.

## UNDERGROUND RISER ASSEMBLY

### WOOD POLE/IN CONDUIT

APPROVED BY: JRH DATE: 07-07-00  
 CHECKED BY: WGS SCALE: NONE  
 DRAWN BY: DAT



No. UG0706021

PLOT 1=1 SH. 10F 1

Friday, September 07, 2012



## 8.10 Conduit

### 8.10.1 General Comments

**Conduit is always required in places with restricted access, (under or potentially under concrete driveways, sidewalks, patios, flowerbeds, etc.)** and in many Networks due to local soil, underground congestion of pipes or other utilities service lines, or other conditions, consult the Company for details. The conduit may be rigid/ intermediate metal steel, rigid aluminum, Schedule 40 PVC or Schedule 80 PVC in appropriate applications. All conduits shall be of such size and type to meet the requirements of the Company and the Company specifications for the selected cable to serve the Customer. All bends and elbows shall be a minimum 36" radius. The Customer's anticipated future load requirements should also be considered when sizing cable and conduit to serve the Customer's present requirements.

### 8.10.2 Installation

#### 8.10.2.1 General Comments

All conduits shall be installed according to Company requirements. Normally, conduits on a Company owned pole will be limited to one. More than one conduit may be allowed in certain circumstances, with prior Company approval Customers requesting additional conduits may be required to provide a separate support structure for the conduits and a suitable attachment point for the Company owned overhead service conductors. When more than one conduit is allowed, they shall be installed adjacent to each other, and not cover more than one quarter of the pole circumference. At Company's option an above ground pedestal may be installed to accommodate additional services. Due to the quality of the soil in some portions of the Company's service area, concrete around the conduit may be required. If concrete encased conduit bends are required at the base of the pole, the concrete shall be formed to prevent its touching the pole and a fibrous separator is required between the pole and the concrete.

#### 8.10.2.2 Conduits Used in Residential Underground Installations

Services installed in conduits for residential Customers shall conform to **Drawing SS8.6-2 or Drawing SS8.6-3**. Also see **Drawing SS8.6-1**. The Customer shall install the conduit at a minimum depth of 30 inches, with the end of the elbow coming up at a point 7 inches from the base of the pole for service from an overhead source. The Customer shall install the conduit to a point 24 inches from the side of the transformer pad for service from an underground source. The Customer shall mark the end of the cable or conduit by a stake or other agreed upon method. In general, the conduits shall be installed such that when the conduit run has more than three 90-degree bends, including riser bends, (riser bends shall be 36 inches in radius), and the Customer shall install a pull box. The pull box shall be of a design that conforms to Company specifications. It shall be installed as advised by the Company. Also consult the Company when conduit or cable length runs exceed 200 feet. A pull box may be needed when conduit runs exceed 200 feet. Long cable runs may also require bigger cable and conduit to compensate for voltage drops. When the source is an overhead system, the Customer shall supply the conduit riser in accordance with Company specifications. The Company will install the riser on the

pole. The Company will pull the conductors in the conduit system. When two or more services originate from one Company pole having overhead facilities, means of accommodating multiple services may be installed by the Company. Refer to Section 8.6.4.

#### **8.10.2.3 Conduit Used in Commercial, Industrial, and Other Non-Residential Underground Installations**

The proposed load, cable sizes and conduit sizes should be given consideration when determining the pulls and lengths of conduit run. The elbow radius for all conduit sizes will be 36 inches. The Company shall specify the number, design and location of pull boxes and total length of conduit runs to be installed. If pull boxes are required, they shall be of sufficient strength, as approved by the Company, to support all expected loads that may be imposed on the structure, including local traffic. All spare conduits, if necessary, will conform to the requirements set forth in Section 8.10.4, Spare Conduits. See **Drawing SS8.7-1** for a typical primary service to a single pad mount transformer serving commercial or industrial Customers. Table 8.10-3 contains a recommended conduit guide for approved conductor sizes.

**Table 8.10-3: Recommended Conduit Guide for Typical Underground Conductor****Primary Conductors**

Size	Voltage	One Cable	Three(3) Cables
#2 Al	15kV	2"	4"
1/0 Al		2"	4"
4/0 Al		2"	5"
750 Al		3"	6"
750 Cu		3"	6"
#1 Al	25kV	2"	5"
2/0 Cu		3"	5"
750 Al		3"	5"
750 Cu		3"	5"
1/0 Al	35kV	3"	5"
750 Al		3"	6"
750 Cu		3"	6"

**Secondary Conductors,**

#4 Al Triplex	2.5" (2" in Arkansas only)
1/0 Al Triplex	2.5" (2" in Arkansas only)
4/0 Al Triplex	2.5" (2" in Arkansas only)
350 Al Triplex	3"
500 Al Triplex	3"
750 Al Triplex	5"
1000 Al Triplex	5"
1/0 Al Quad	3"
4/0 Al Quad.	3"
350 Al Quad.	3"
500 Al Quad.	4"
750 Al Quad.	5"
1000 Al Quad.	5"

\*The recommended conduit size conforms to the Company standards for conduit used on the Company system. Consult the Company during the design process to ensure that the proposed conduit system meets Company requirements.

**8.10.3 Types of Conduit****8.10.3.1 General Comments**

All conduits shall be rigid/intermediate metal steel, rigid aluminum, and/or rigid nonmetallic conduit with an U. L. label. Local Building Codes may be restrictive in the type(s) of conduit permitted. Consult authorities having jurisdiction before choosing conduit material.

**8.10.3.2 Rigid/Intermediate Metal Conduits**

Rigid intermediate metal steel and rigid aluminum conduits (with a U. L. label) may be used. Rigid aluminum conduit (with a U. L. label) can be used above grade only. In certain cases, when steel conduit is used below final grade, it shall be completely

encased in a minimum of 4" of red concrete according to **Drawing SS8.6-5** or wrapped with a material approved by the Company to provide corrosion protection.

#### **8.10.3.3 Rigid Nonmetallic Conduits**

Rigid Polyvinyl Chloride (PVC), Schedule 80, (with a U. L. label), may be used as a conduit riser, where building codes permit, under the meter socket, and as primary, secondary, and service risers on distribution poles. Rigid nonmetallic conduits may be used in inaccessible areas and below final earth grade. Generally, nonmetallic conduit installed below grade shall be at least Schedule 40 PVC (with a U. L. label). In certain cases, concrete encasement may be required according to **Drawing SS8.6-5**.

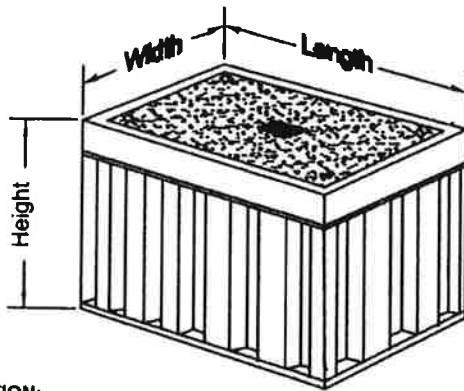
#### **8.10.3.4 Conduit Fittings**

Conduit fittings to join the continuous lengths of conduits and to join the continuous lengths to bends of the same material shall be of the same material as the conduits and shall be U. L. approved and meet Company specifications. Fittings to join rigid nonmetallic conduit to rigid metal or intermediate metal conduit at transitions such as from below grade to above grade shall be U. L. approved and meet Company specifications.

#### **8.10.4 Spare Conduits**

The Company recommends the installation of spare conduits. Spare conduits will conform to all conduit requirements as set forth in these Service Standards.

In cases where the primary system is three phase and radially fed, a minimum of one spare elbow shall be installed with the primary conduit in the transformer pad, vault or socket when a complete spare conduit system is not provided. See Section 10, Transformers for further explanation of transformer installations.

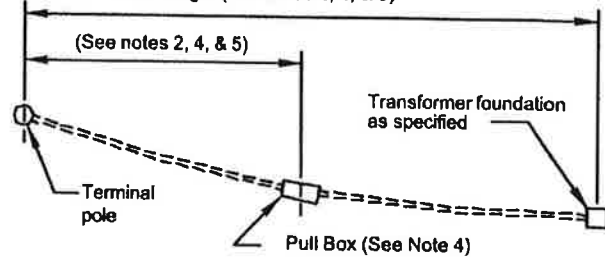
**PULL BOX FOR PRIMARY SYSTEM****CAUTION:**

Pullboxes are typically designed for green spaces or where only accidental or rare light vehicle traffic occurs. Mall parking lots, roads, and other areas should require vaults. Consult the Company before specifying or purchasing any pullbox.

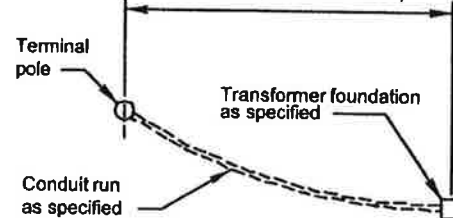
**NOTES:**

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. It is recommended that the Customer contact the Company prior to the installation of the conduit system or the transformer foundation.
3. The Customer shall typically bear the cost of conduit and other material and the installation from the terminal pole to the transformer foundation.
4. If more than two 90° bends are required in a 300' run, including riser bends, an approved pull box may be required.
5. The number and location of pull boxes and the total length of conduit run to be installed shall be approved by the Company.
6. If pull boxes are required, they shall be of sufficient strength to support probable local traffic. Consult the Company before specifying or purchasing any pullbox.
7. The Customer shall install minimum 80 lb. non-metallic (manilla or grass) pull line or bull tape in the Customer's conduit. Conductor normally supplied by Company.
8. Conduit below grade shall be separated from telephone, cable, or water facilities by not less than 3" of concrete, 4" of brick masonry, or 12" of well tamped earth and 18" of well tamped earth for gas facilities.
9. Rigid steel elbows may be required.
10. Conduit sizes and elbow radius shall be as shown in table.
11. Conduit shall bear the U.L. label, either rigid nonmetallic (schedule 80 PVC above ground and schedule 40 PVC below ground) or rigid/intermediate metal conduit. (aluminum not permitted below grade). If metal conduit is used below grade, corrosion protection shall be provided.
12. A spare set of conduits is recommended.

Total length (See notes 2, 4, &amp; 5)

**INSTALLATION WITH PULLBOX**

300' max. (See notes 2 &amp; 5)

**STANDARD INSTALLATION****CONDUIT TABLE**

CONDUCTOR SIZE (AWG)	ONE CABLE	THREE CABLES	ELBOW RADIUS
<b>15,000 VOLT</b>			
#2	2"	4"	36"
1/0	2"	4"	36"
4/0	2"	5"	36"
750 kcm	3"	6"	36"
<b>25,000 VOLT</b>			
#1	2"	5"	36"
2/0	3"	5"	36"
750 kcm	3"	5"	36"
<b>35,000 VOLT</b>			
1/0	3"	5"	36"
750 kcm	3"	6"	36"

**Call 48 Hours Before You Dig**  
**1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

**ENTERGY SERVICES, INC.**

**TYPICAL PRIMARY SERVICE TO SINGLE  
PADMOUNT TRANSFORMER SERVING  
COMMERCIAL OR INDUSTRIAL CUSTOMER**





APPROVED BY: JDS DATE: April 1998  
CHECKED BY: LKE SCALE: NONE  
DRAWN BY: WINK-AJC



No. SS8.7-1

PLOT 1=1 SH. 1 OF 1



4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTIONS GROUP RECOMMENDATIONS	MCC	
NO.	DATE:	REVISION	BY:	APPR:

<p>Box, Junction Pull, 48Wx96Lx48H, with bottom</p> <p>Fiberglass with permanent bottom, to be furnished w/out knockouts holes, w/ four piece, penta head bolted cover, cover to be rated at 16,000lbs Designed for A-16 loading as per ASTM C857-87. Lid bolt down material to consist of SS captive recessed pentahead bolts. Assembly shall be supplied with two 30" long galvanized cable racks and adjustable 10" cable hooks as per ANSI C135.35 figure 7. Assembly to be supplied without vents so it can be water proofed. To be furnished with four - 2" pulling eyes, pulling eyes to be rated at 2000lbs.</p> <p>Logo should read <u>Entergy Electric</u> or <u>Electric</u>, to be cast in cover. Shall comply with Entergy's Specification DU01-04, Latest Revision.</p>	<p>Armorcast</p> <p>CDR</p> <p>Newbasis</p>	<p>A6004896TAFENT2</p> <p>PA12-4896-48B*-0525</p> <p>FCA489648-ENTERGY2</p>	
<p>Box, Junction Pull, 48Wx96Lx48H, no bottom</p> <p>Fiberglass with open bottom, to be furnished w/out knockouts holes, w/ four piece, penta head bolted cover, cover to be rated at 16,000lbs Designed for A-16 loading as per ASTM C857-87. Lid bolt down material to consist of SS captive recessed pentahead bolts. Assembly shall be supplied with two 30" long galvanized cable racks and adjustable 10" cable hooks as per ANSI C135.35 figure 7. To be furnished with four - 2" pulling eyes, pulling eyes to be rated at 2000lbs.</p> <p>Logo should read Entergy Electric or Electric, to be cast in cover. Shall comply with Entergy's Specification DU01-04, Latest Revision.</p>	<p>Armorcast</p> <p>CDR</p> <p>Newbasis</p>	<p>A6004896TAFENT1</p> <p>PA12-4896-48*-0526</p> <p>FCA489648-ENTERGY3</p>	
<p>Box, Junction Pull, 48Wx96Lx48H, polymer concrete, with bottom</p> <p>Polymer concrete with permanent bottom, to be furnished w/out knockouts holes, w/ four piece, penta head bolted cover, assembly to be rated at a minimum of 15,000lbs. Designed for A-16 loading as per ASTM C857-87. Lid bolt down material to consist of SS captive recessed pentahead bolts. Assembly shall be supplied with two 30" long galvanized cable racks and adjustable 10" cable hooks as per ANSI C135.35 figure 7. Assembly to be supplied without vents so it can be water proofed. To be furnished with four - 2" pulling eyes, pulling eyes to be rated at 2000lbs. Logo should read Entergy Electric or Electric, to be cast in cover. Shall comply with Entergy's Specification DU01-04, Latest Revision.</p> <p>Application information: To be used in areas where poor soil conditions require the use of boxes with more rigid sides than the fiberglass boxes.</p>	<p>Armorcast</p> <p>Quazite</p>	<p>A6004896TAPBENT</p> <p>PG4896Z514</p>	
<p>Box, Junction Pull, 48Wx96Lx48H, polymer concrete, no bottom</p> <p>Polymer concrete with open bottom, to be furnished w/out knockouts holes, w/ four piece, penta head bolted cover, assembly to be rated at a minimum of 15,000lbs. Designed for A-16 loading as per ASTM C857-87. Lid bolt down material to consist of SS captive recessed pentahead bolts. Assembly shall be supplied with two 30" long galvanized cable racks and adjustable 10" cable hooks as per ANSI C135.35 figure 7. To be furnished with four - 2" pulling eyes, pulling eyes to be rated at 2000lbs. Logo should read Entergy Electric or Electric, to be cast in cover. Shall comply with Entergy's Specification DU01-04, Latest Revision.</p> <p>Application information: To be used in areas where poor soil conditions require the use of boxes with more rigid sides than the fiberglass boxes.</p>	<p>Armorcast</p> <p>Quazite</p>	<p>A6004896TAPCX48</p> <p>PG4896Z526</p>	





## ENTERGY SERVICES DISTRIBUTION STANDARDS

TITLE: <b>Ethylene Propylene Rubber Insulated Primary Aluminum Cables</b>	STANDARD NUMBER: <b>DA0108, Rev. 08</b>	EFFECTIVE DATE: <b>April 23, 2008</b>
PREPARED BY: <b>J.E.Dean Distribution Standards</b>	APPROVED BY: <b>James R.Hickman Manager of Standards &amp; Engineering Services</b>	

STOCK NUMBER	Material description	MANUFACTURER	CATALOG NUMBER	ILLUSTRATION
<b>EN013216</b> <b>REPLACES</b> EN000434 AR120-091 AR120-0910 LP315-0620 MP304-3162 *MP304-3164	Cable, electrical, urd EPR primary, aluminum conductor: 1C, #2 awg, 15 kV, as per Entergy specification DA01-07 latest version <b>Additional information:</b> The cable shall have water absorbing strand filled compressed conductor, black semi-conducting strand shield, 0.220 inch ethylene-propylene-rubber insulation, a helically applied annealed copper wire full concentric neutral, a 50 mil linear low density polyethylene encapsulating jacket, and sequential footage markings every two feet on surface of jacket.	Kerite Okonite Prysmian Power Cables <b>General Cable</b>	None None None  <b>None</b>	
<b>EN024603</b> Replaces ENCSPXPB AA LP315-0510 MP304-3183 AR120-083 AR120-097	Cable, electrical, urd EPR primary, aluminum conductor: 1, #1/0 awg, 15 kV, as per Entergy specification DA01-07 latest version <b>Additional information:</b> The cable shall have water absorbing strand filled compressed conductor, black semi-conducting strand shield, 0.220 inch ethylene-propylene-rubber insulation, a helically applied annealed copper wire full concentric neutral, a 50 mil linear low density polyethylene encapsulating jacket, and sequential footage markings every two feet on surface of jacket For Maintenance of existing cable only	Kerite Okonite Prysmian Power Cables <b>General Cable</b>	None None None  <b>None</b>	

\* Denotes obsolete stock code

**ENTERGY DISTRIBUTION STANDARDS**


TITLE: <b>Ethylene Propylene Rubber Insulated Primary Aluminum Cables</b>		STANDARD NUMBER: <b>DA0108, Rev. 08</b>	EFFECTIVE DATE: <b>April 23, 2008</b>	
<b>STOCK NUMBER</b>	<b>Material description</b>	<b>MANUFACTURER</b>	<b>CATALOG NUMBER</b>	<b>ILLUSTRATION</b>
<b>EN013217</b> <b>REPLACES</b> EN000435 AR120-089 AR120-096 LP315-0640 MP304-3185	Cable, electrical, urd EPR primary, aluminum Conductor: 1, #4/0 awg, 15 kV, as per Entergy Specification DA01-07 latest version <b>Additional information:</b> The cable shall have water absorbing strand filled compressed conductor, black semi-conducting strand shield, 0.220 inch ethylene-propylene-rubber insulation, a helically applied annealed copper wire one-third concentric neutral, a 50 mil linear low density polyethylene encapsulating jacket, and sequential footage markings every two feet on surface of jacket.	Kerite Okonite Prysmian Power Cables General Cable	None None None None	
<b>EN013218</b> <b>REPLACES</b> *AR120-094 AR120-098 AR120-099 *AR120-100 LP315-0515 LP315-0518 LPCSPXPBA B CSPXPBAB	Cable, electrical, urd EPR primary, aluminum conductor: 1C, #750 mcm, 15 kV, as per Entergy specification DA01-07 latest version <b>Additional Information:</b> The cable shall have water absorbing strand filled compressed conductor, black semi-conducting strand shield, 0.220 inch ethylene-propylene-rubber insulation, 8 mil copper Longitudinally Applied Corrugated Tape Shielded Cable Neutral, 80 mil linear low density polyethylene encapsulating jacket, and sequential footage markings every two feet on surface of jacket,	Kerite Okonite Prysmian Power Cables General Cable	None None None None	

\* Denotes obsolete stock code




**DISTRIBUTION DESIGN BASIS  
ELECTRIC STANDARDS**

TITLE: <b>Network Primary Cable</b>	STANDARD NUMBER: <b>DV02-02, Rev. 10</b>	EFFECTIVE DATE: <b>July 28 2010</b>
PREPARED BY: <b>Jim Dean</b> Distribution Design Basis	APPROVED BY: <b>James R. Hickman</b> Manager Of Distribution Design Basis	


STOCK NUMBER	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NUMBER	ILLUSTRATION
0032080706 REPLACES MP304-3170	<p>Cable, electrical: Network, EPR, single conductor copper, 1/0 AWG, 15KV, in accordance with Entergy Specification DA01-12, latest revision.</p> <p><b>Additional Information:</b> Conductor shall be compressed copper filled with a water absorbent compound. The ethylene propylene rubber insulation shall have a nominal thickness of 220 mils The transversely-corrugated, longitudinally-applied, copper tape shield shall have a thickness of 10 mils. The 80 mil jacket shall be constructed of black, non-conducting linear low density high molecular weight polyethylene Sequential markings on the jacket shall be at a minimum of 2 foot intervals with unmarked surface not to exceed 6 inches.</p> <p>To be supplied on a max 62" outer diameter, 38" overall width, min 21" hub non returnable reel with 1100 ft min and 1500 ft max cable.</p>	<p>Okonite</p> <p>Prysmian Power Cables General</p>	<p>None</p> <p>None</p> <p>None</p>	

\* - Denotes obsolete stock code (Approved for use, Do not repurchase).

~~Strikethrough~~ - Denotes deleted information.

Shading - Denotes added or changed information.

**ELECTRIC STANDARDS****ENTERGY DISTRIBUTION DESIGN BASIS**



TITLE: <b>Network Primary Cable</b>		STANDARD NUMBER: <b>DV02-02, Rev10</b>		EFFECTIVE DATE: <b>July 28 2010</b>
STOCK NUMBER	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NUMBER	ILLUSTRATION
0032024801 REPLACES PS311-0200	<p>Cable, electrical: Network, EPR, single conductor copper, 2/0 AWG, 25KV, in accordance with Entergy Specification DA01-12, latest revision.</p> <p><b>Additional Information:</b> Conductor shall be compact copper filled with a water absorbent compound. The ethylene propylene rubber insulation shall have a nominal thickness of 260 mils The transversely-corrugated, longitudinally-applied, copper tape shield shall have a thickness of 10 mils. The 80 mil jacket shall be constructed of black, non-conducting linear low density high molecular weight polyethylene Sequential markings on the jacket shall be at a minimum of 2 foot intervals with unmarked surface not to exceed 6 inches.</p> <p>To be supplied on returnable steel reels with maximum dimensions of 78"od x 47"w with between 2000 ft and 3000 ft of conductor on reel.</p>	Okonite  Prysmian Power Cables General	None  None  None	

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**ELECTRIC STANDARDS****ENTERGY DISTRIBUTION DESIGN BASIS**TITLE: **Network Primary Cable**STANDARD NUMBER:  
**DV02-02, Rev10**EFFECTIVE DATE:  
**July 28 2010**

STOCK NUMBER	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NUMBER	ILLUSTRATION
EN024407 REPLACES	<p>Cable, electrical: Network, EPR, 3 single conductor triplexed copper, 2/0 AWG, 25KV, in accordance with Entergy Specification DA01-12, latest revision.</p> <p><b>Additional Information:</b> Conductor shall be compact copper filled with a water absorbent compound. The ethylene propylene rubber insulation shall have a nominal thickness of 260 mils. The transversely-corrugated, longitudinally-applied, copper tape shield shall have a thickness of 10 mils. The 80 mil jacket shall be constructed of black, non-conducting linear low density high molecular weight polyethylene. Sequential markings on the jacket shall be at a minimum of 2 foot intervals with unmarked surface not to exceed 6 inches and shall have letter (A,B,or C)phase markings. To be supplied on returnable steel reels with maximum dimensions of 96"od x56"w and at least 1000 ft of conductor on reel.</p>	Okonite  Prysmian Power Cables  General	None  None  None	
0032011457 REPLACES LP-(None) MP-(None) PS-(None) CSP(None) 00303-3102 AR122-253	<p>Cable, electrical: Network, EPR, single conductor copper, 4/0 AWG, 15KV, in accordance with Entergy Specification DA01-12, latest revision for maintenance only</p> <p><b>Additional Information:</b> The conductor shall be compact copper filled with a water absorbent compound. The ethylene propylene rubber insulation shall have a thickness of 220 mils. The transversely-corrugated, longitudinally-applied, copper tape shield shall have a thickness of 10 mils. The 80 mil linear low density polyethylene encapsulating jacket, shall have sequential footage markings on surface of jacket. For maintenance of existing cable only</p>	Okonite  Prysmian Power Cables General	None  None  None	

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**Entergy**
**Distribution Standards & Engineering Services**
**Standard Number DA01-12, Rev. 03**
**Page 1 of 11**
**Title: Ethylene Propylene Rubber  
Insulated Primary Copper Cables**
**Effective Date:  
February 28, 2005**
**Prepared By: J. E. Dean,  
Standards & Engineering  
Services**
**Approved By: James R. Hickman,  
Manager of Distribution Standards & Engineering Services**
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**ENTERGY DISTRIBUTION STANDARDS**

<b>TITLE: Ethylene Propylene Rubber Insulated Primary Copper Cables</b>	<b>STANDARD NUMBER: DA01-12, Rev. 03</b>	<b>EFFECTIVE DATE: February 28, 2005</b>
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**1.0 INTRODUCTION****1.1 Purpose**

This specification covers the construction, mechanical and electrical requirements for a shielded underground distribution primary cable suitable for duct or conduit installations or direct-burial in wet or dry locations on grounded wye distribution systems for voltages up to 35,000 volts phase-to-phase. Where references are made to specifications or standards of the American Society of Testing and Materials (ASTM), Association of Edison Illuminating Companies (AEIC), National Electrical Safety Code (NESC) and Insulated Cable Engineers Association (ICEA), the latest revision thereof shall apply **except where specified differently in this document.**

**1.2 Scope**

This standard applies to all proposed Copper underground distribution primary cable throughout the entire Entergy System.

**2.0 DEFINITIONS**

ASTM - American Society of Testing and Materials

AEIC - Association of Edison Illuminating Companies

AEIC will refer to AEIC CS8-00 Specification for Extruded Dielectric Shielded Cables Rated 5 through 46kV (1<sup>st</sup> Edition)

ICEA - Insulated Cable Engineers Association

ICEA will refer to Publication # ANSI/ICEA S-97-682-2000 Standard for Utility Shielded Power Cables Rated 5,000- 46,000 Volts (This Standard is for copper Longitudinally Applied Corrugated Tape Shielded Cable)

NESC - National Electrical Safety Code

**ENTERGY DISTRIBUTION STANDARDS**

<b>TITLE: Ethylene Propylene Rubber Insulated Primary Copper Cables</b>	<b>STANDARD NUMBER: DA01-12, Rev. 03</b>	<b>EFFECTIVE DATE: February 28, 2005</b>
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**3.0 DETAILS****3.1 Conductor**

**3.1.1** Standard conductor sizes for each voltage class shall be as shown in the following table.

<b>Standard Conductor Sizes</b>	<b>No of conductors / configuration</b>	<b>Voltage Class</b>	<b>Wire Stranding</b>	<b>Entergy Standard</b>
2/0 AWG	one	25kV	compact round	Downtown Network Primary Cable covered on Standard DV0202
2/0 AWG	triplexed	25kV		
4/0 AWG	one	15kV		
350 kcmil	one	15kV		
500 kcmil	one	15kV		
500 kcmil	triplexed	15kV		
750 kcmil	triplexed	25kV	compact round	Underground Primary Cable covered on Standard DA0113
750 kcmil	one	15kV	Class B compressed	
750 kcmil	one	25kV	compact round	
750 kcmil	one	35kV	Class B compressed	

**3.1.2** Conductor hardness shall be soft-drawn as per ASTM B-8. Reference specifications are below:

<b>Copper Conductor</b>	<b>Reference Specifications</b>
Class B compressed stranded	ASTM B-8 and ICEA Section 2.5
Compact round	ASTM B-496 and ICEA Section 2.5

**3.1.3** The stranded conductor shall have the inner interstices continuously filled with a compound to prevent the ingress of moisture. The compound used shall be flexible and stable under the conditions of cable operation and compatible with the conductor, conductor shield, insulation and connectors.

**3.2 Strand Shielding**

The stranded conductor shall be covered with a layer of extruded material compatible with the insulation and the conductor. The manufacturer shall certify the cable design and strand shield as either a semi-conducting layer for "Discharge Free" cable designs or a non-conductive, stress control layer for "Discharge Resistant" cable designs.

The Strand Shield shall be

- capable of being cleanly stripped away from the conductor with no residue on the conductor itself.

**ENTERGY DISTRIBUTION STANDARDS**

<b>TITLE: Ethylene Propylene Rubber Insulated Primary Copper Cables</b>	<b>STANDARD NUMBER: DA01-12, Rev. 03</b>	<b>EFFECTIVE DATE: February 28, 2005</b>
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- firmly bonded to the overlying insulation and shall meet the requirements of Section C "Conductor Shield Requirements" of AEIC and Section 3 of ICEA
- per Table 3-1 of ICEA, summarized below:

<b>Conductor size</b>	<b>strand shield minimum thickness (minimum spot).</b>
4/0 AWG and smaller	0.012"
350 & 500 kcmil	0.016"
750 kcmil	0.020"

For compact round conductors, the conductor shield thickness may be 50 percent of the above table if that have a diameter eccentricity (conductor maximum diameter - conductor minimum diameter) less than or equal to 2 mils measured before the conductor shield is applied, and meet the requirements of 3.2.1.

**3.3 Insulation**

**3.3.1** The conductor insulation shall be a high quality, ozone resistant, ethylene-propylene rubber per ICEA Part 4.

**3.3.2** Insulation thickness is specified below (reference is Table 4-11 ICEA)

<b>Voltage Class</b>	<b>Minimum Point Thickness</b>	<b>Nominal Thickness</b>	<b>Maximum Point Thickness</b>
15 kV	.210"	.220"	.250"
25 kV	.245"	.260"	.290"
35 kV	.330"	.345"	.375"

**3.3.3** The insulated power cable shall have the following minimum temperature ratings:

<b>Operating Condition</b>	<b>Maximum Conductor Temperature</b>
Continuous Operation	105°C
Emergency Overload	140°C
Short-Circuit	250°C

**3.4 Insulation Shield**

**3.4.1** The insulation shall be covered with a layer of extruded semi-conducting material compatible with the insulation and copper concentric neutral. It shall fit tightly to the outer surface of the insulation and shall strip cleanly. The maximum stripping tension shall not be more than 15 pounds as determined by paragraph G3.1 of AEIC and

**ENTERGY DISTRIBUTION STANDARDS**

<b>TITLE: Ethylene Propylene Rubber Insulated Primary Copper Cables</b>	<b>STANDARD NUMBER: DA01-12, Rev. 03</b>	<b>EFFECTIVE DATE: February 28, 2005</b>
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Paragraph 5.4 of ICEA. This supercedes ICEA paragraph 5.4.1.1. The semi-conducting insulation shield shall be clearly marked as being semi-conducting.

**3.4.2** The thickness of the extruded insulation shielding for the copper Longitudinally Applied Corrugated Shielded Cable shall be in accordance with Table 5-1 ICEA S-97-682-2000 summarized below:

Cable size	Voltage rating	Cable insulation minimum diameter	Insulation shield	
			min point	max point
#2/0	25kV	0 to 1.000	0.024	0.60
#4/0	15kV			
350	15kV	1.001 to 1.500	0.032	0.060
500	15kV			
750	15kv			
750	25kv			
750	35kV	1.501 to 2.000	0.040	0.075
All dimensions in inches				

**3.4.3** The semi-conducting insulation shield shall meet the requirements of ICEA.

### **3.5 Neutral (Metallic Shields)**

**3.5.1** An annealed and uncoated copper strip longitudinally folded and transversely corrugated shall be used for the cable's metallic shield structure. The copper tape thickness shall be 10 mils.

<b>Size &amp; thickness specification for copper Longitudinally Applied Corrugated Shield</b>			
	<b>minimum</b>	<b>nominal</b>	<b>maximum</b>
Copper tape	10 mils	10 mils	10.6 mils
Corrugation	34 mils	40 mils	48 mils
Total	44 mils	50 mils	48.5 mils

The width of the strip shall be selected so as to assure that the edges have a minimum overlap of 250 mils when the underlying core is expanded at a uniform temperature of 140°C. The corrugations shall be at right angles to the axis of the cables and register at the overlap. A water blocking material shall be used to seal the metallic shield. The overlap sealant shall be flexible enough to allow movement during cable expansion and contraction.



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**3.6 Cable Jacket**

**3.6.1** The cable jacket shall be black insulating linear low density polyethylene (LLDPE) meeting the requirements of Part 7 ICEA.

**3.6.2** The jacket thickness shall be as below:

Standard Conductor Sizes	Voltage Class	Maximum Cable Outer Diameter	Maximum Triplexed Outer Diameter	Minimum Jacket Thickness	Maximum Jacket Thickness	Entergy Standard
2/0 AWG	25kV	1.37"	2.81	0.070"	0.105"	Downtown Network Primary Cable covered on Standard DV0202
4/0 AWG	15kV	1.40"				
350 kcmil	15kV	1.56"	--			
500 kcmil	15kV	1.68"	3.49			
750 kcmil	25kV	2.00"	4.30	0.070"	0.105	
750 kcmil	15kV	1.85"	--	0.070	0.105	
750 kcmil	25kV	2.00"	--			
750 kcmil	35kV	2.26"	--			

**3.6.3** The jacket shall fill the void spaces between the concentric neutral strand wires on concentric neutral cables.

**3.7 Identification**

**3.7.1** The cable jacket shall be indent marked along the length of the cable with manufacturer identification, type of insulation, (i.e., EPR, not manufacturer's trade name), size of conductor, type of conductor, rated voltage, year of manufacture and insulation thickness. All marking shall be repeated along the cable jacket at regular intervals with unmarked surfaces not exceeding six inches. Identification on the cable jacket shall be in accordance with ICEA Paragraph 8.2.

**3.7.2** The cable jacket shall be indent marked with the appropriate identification symbol as required by the 2002 National Electrical Safety Code Paragraph 350G.

**3.7.3** Sequential footage marking shall be clearly printed at intervals not exceeding 2 feet on the surface of the jacket per paragraph 8.2.3 of ICEA. Each shipping reel will have the beginning footage marker (footage marker adjacent to the drum) and ending footage marker (footage marker on the outermost part of the reel) clearly displayed on the reel as per 3.9.7.

**3.7.4** The manufacturer's name and year of manufacture (2003, 2004, etc...) shall be stamped (indented) on the center strand of the insulated conductor for permanent identification. The stamp shall be repeated along the strand at regular intervals with the unstamped surfaces not exceeding 12 inches as per paragraph 8.2.3 ICEA

**ENTERGY DISTRIBUTION STANDARDS**

<b>TITLE: Ethylene Propylene Rubber Insulated Primary Copper Cables</b>	<b>STANDARD NUMBER: DA01-12, Rev. 03</b>	<b>EFFECTIVE DATE: February 28, 2005</b>
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**3.7.5** The cable jacket shall be marked with three extruded red stripes located 120 degrees apart as described in paragraph 8.2.1.1 ICEA.

### **3.8 Test and Performance Requirements**

**3.8.1** The cable shall comply with all electrical and physical requirements and tests as prescribed by AEIC and ICEA.

**3.8.2** Discharge Free cable shall meet Section 4.3.1 of ICEA. A partial discharge test shall be carried out for each master length. Maximum permissible partial discharge shall be five (5) Pico coulombs when tested from 0 to 200 volts per mil.

**3.8.3** Discharge Resistant cable shall meet Section 4.3.2

**3.8.4** Measurements shall be made per ICEA Section 9 and AEIC. Should the diameter, over the insulation or insulation shield, fall outside of the range given in the Tables shown below in AEIC CS8-00 **the cable will be rejected automatically by the manufacturer.**

<b>Table</b>	<b>Type of cable</b>	<b>Cable Size</b>	<b>Cable Voltage rating</b>	<b>Entergy Classification</b>
2-9	Compressed stranding	750	15kv	Underground Primary Cable covered on Standard DA0113
		750	35kv	
2-10	Compact stranding	750	25kV	
2-10	Compact cable	750	25kV	Downtown Network Primary Cable covered on Standard DV0202
		2/0	25kv	
		4/0, 350,500	15kv	

**3.8.5** Manufacturers are to complete the attached form, "Reel Identification Form", which is to be submitted with the AEIC Certified Test Data and partial discharge X-Y data.

**3.8.6** All test results are to be identified with the Manufacturer's job number, test number, and reel numbers from which the samples were taken for the AEIC Certified Tests.

**3.8.7** Certification of passing the partial discharge test (Discharge Free Cable only), the AEIC and ICEA Certified Test Results and the Reel Identification Form shall be submitted electronically to the Email. JHICKM1@ENTERGY.COM (Manager of Standards & Engineering Services) or to the address in 3.8.8.

<b>TITLE: Padmounted Three-Phase Loop-Feed Transformers, 5000kVA and Smaller, 480 Volts and Below</b>	<b>STANDARD NUMBER: DE03-05, Rev. 06</b>	<b>EFFECTIVE DATE: February, 2007</b>

## 1.0 INTRODUCTION

### 1.1 Purpose

This standard presents technical specifications for the manufacture of padmounted loop-feed three-phase transformers to be utilized on its underground primary systems. The intent of this standard is to establish minimum electrical, dimensional and mechanical characteristics of three phase, 60 Hz., mineral-oil-immersed, self-cooled, padmounted compartmental type distribution transformers equipped with separable insulated high voltage connectors.

### 1.2 Scope

This standard applies to loop-feed units 5000 kVA and smaller, with high voltage of 34500GrdY/19920 volts and below, and with low voltage of 480Y/277 volts and below.

## 2.0 DEFINITIONS

**ANSI** - American National Standards Institute

**IEEE** - Institute of Electrical and Electronics Engineers

**NEMA** - National Electrical Manufacturers Association

**Deadfront** - designates a high voltage connection system utilizing appropriately designed insulated termination devices to eliminate exposed high voltage apparatus.

**Padmounted Compartmental-Type Transformer** - a transformer unit built for mounting on a flat rigid surface (generally a concrete pad) and consisting of a tank and cable terminating enclosure designed to allow access by authorized personnel while providing resistance to unauthorized entry.

**Sealed Tank System** - a system in which the interior of the transformer is sealed from the atmosphere throughout its top oil temperature range and in which the gas plus oil volume remains constant. The transformer is to remain effectively sealed through a top oil temperature range of minus 5°C to plus 105°C, provided the initial liquid level had been properly adjusted.

## 3.0 DETAILS

### 3.1 General

It is the intent that transformer units covered herein shall comply with the latest revision of ANSI/IEEE C57.12.26, except as modified or supplemented by the provisions of this Standard. Characteristics, definitions, terminology, voltage designations and test requirements, except as specifically covered within this standard, shall be in

<b>TITLE: Padmounted Three-Phase Loop-Feed Transformers, 5000kVA and Smaller, 480 Volts and Below</b>	<b>STANDARD NUMBER: DE03-05, Rev. 06</b>	<b>EFFECTIVE DATE: February, 2007</b>
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accordance with the latest revisions of the ANSI and IEEE standards listed in Section 4.0 - References.

### 3.2 Electrical Characteristics

#### 3.2.1 Kilovolt-Ampere Ratings

Kilovolt-ampere ratings are continuous and based on not exceeding an 80°C hot spot conductor temperature rise. The temperature rise of the insulating oil shall not exceed 65°C when measured near the top of the tank. Temperature rises shall be based upon a 40°C ambient temperature. Standard kilovolt-ampere ratings shall be: 150, 300, 500, 750, 1000, 1500, 2000, 2500, 3000, 3750, 5000.

#### 3.2.2 Voltage Ratings

Low voltage ratings, with associated standard kVA ranges, shall be in accordance with Table A.

**Table A**

<b>Low Voltage</b>	<b>kVA Ratings</b>
208Y/120	150 - 1500
480Y/277	150 - 5000

#### 3.2.3 High Voltage Taps

Units shall have a high voltage tap changer with external operating handle located in the high voltage compartment in a position which allows operation with cables in place. The tap changer shall be designed for de-energized operation and be labeled "**For De-energized Operation Only**". Tap positions shall be clearly marked to provide a visual indication of tap position. Each tap position shall have a positive mechanical stop with latching to prevent accidental movement. The tap changer BIL shall at least equal that of the transformer primary and shall be rated for the full capacity of the transformer. Voltage tap values for all kVA sizes and shall be as shown in Table B.

**Table B**

<b>High Voltage Rating (Nominal)</b>	<b>High Voltage Tap Values</b>	
	<b>Above Nominal</b>	<b>Below Nominal</b>
4160GrdY/2400 X 13200GrdY/7620	NONE @ 4 kV 14100, 13800, 13500	NONE @ 4 kV 12835, 12470, 12105
13200GrdY/7620	14100, 13800, 13500	12835, 12470, 12105
23900GrdY/13800	24497	23302, 22860, 22288
34500GrdY/19920	36225, 35363	33638, 32775

<b>TITLE: Padmounted Three-Phase Loop-Feed Transformers, 5000kVA and Smaller, 480 Volts and Below</b>	<b>STANDARD NUMBER: DE03-05, Rev. 06</b>	<b>EFFECTIVE DATE: February, 2007</b>
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### 3.2.4 Basic Lightning Impulse Insulation Levels and Dielectric Test Levels

The basic lightning impulse insulation levels (BIL's) shall be in accordance with Table C. Dielectric test levels shall be in accordance with those listed for distribution and Class I power transformers in Table 4 of ANSI C57.12.00.

**Table C**

<b>High Voltage Rating</b>	<b>BIL Rating</b>
4160GrdY/2400	95 kV
13200GrdY/7620	95 kV
23900GrdY/13800	125 kV
34500GrdY/19920	150 kV
<b>Low Voltage Rating</b>	<b>BIL Rating</b>
208Y/120	30 kV
480Y/277	30 kV

### 3.2.5 Percent Impedance Voltage

The allowable range of percent impedance voltage, as measured on the rated high voltage tap, shall be in accordance with Table D.

**Table D**

<b>kVA Rating</b>	<b>Percent Impedance</b>
150 - 500	3.25% - 4.75%
750 - 5000	5.32% - 6.18%

### 3.2.6 Testing

Routine tests on all transformers shall be made as specified by ANSI C57.12.00 and C57.12.90, with dielectric testing as modified in accordance with Section 6.2 of ANSI C57.12.26. All transformers shall be given a full-wave lightning impulse test. Test values of losses, impedance, regulation and efficiency are to be corrected to a reference temperature of 85°C and submitted to the Standards and Engineering Services Department.

## 3.3 Construction

### 3.3.1 General

The general construction of the padmounted transformer shall conform to Section 7 of ANSI C57.12.26 and the following requirements of this standard. The construction shall also comply with the tests and requirements for enclosure security as specified in ANSI C57.12.28.

The padmounted transformer shall consist of the transformer tank and high voltage and low voltage terminating compartments assembled as an integral unit suitable for flush mounting outdoors on a flat rigid surface without additional housing, fences or other

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provisions. There shall be no exposed screws, bolts or other fastening devices which are externally removable. The unit shall be designed to operate with a tilt of 4 degrees in any direction without any derating or detrimental effects.

### 3.3.1.1 Cooling Radiators

Cooling radiators for 3750 kVA units and smaller shall be located on the left and back of the padmount transformers, facing the front of the cable compartments. The target objective is to develop the most economical design that minimizes the difference between the centerline of the cable compartment (primary and secondary together) to the extreme dimensions left and right from the center of the cable compartment. Cooling radiators on the right hand side are acceptable on 5000 kVA and larger units if they improve or have minimum effect on the symmetry of the transformer on the pad.

### 3.3.1.2 Compartments and Doors

The high and low voltage compartments shall be located side by side, with the low voltage compartment on the right when viewed from the front of the unit. The high and low voltage compartments shall be separated by a removable rigid barrier extending from tank wall to doors.

Doors on the high voltage and low voltage compartments shall be panel type hinged at the front of the cabinet with AISI type 304 stainless steel, or better, hinge assemblies attached to the transformer enclosure and the door in a manner such that the hinges cannot be loosened or removed from the exterior of the cabinet. The doors shall be equipped with stops for latching in the open position (minimum 90 degrees from closed position) and shall be designed for removal by lifting off only in the open position.

The high voltage compartment door shall be constructed such that the low voltage compartment door must first be opened, followed by removal of at least one recessed captive pentahead bolt before gaining access to the high voltage compartment. The pentahead bolt is to be AISI type 304 stainless steel, or better, for corrosion resistance, and is to have 0.560" (+0.0", -0.02") sides.

The low voltage compartment door shall have a three point latching system with an external handle having provisions for padlocking such that the padlock is located to limit prying, cutting or breaking. The padlock provisions shall, as a minimum, accommodate a lock of 2" width with shackle diameter of  $\frac{3}{8}$ " and inside dimensions (when locked) of 1" width by  $1\frac{1}{8}$ " length. One captive and recessed pentahead security bolt with a blind receiver hole shall also be provided. The pentahead bolt is to be made of AISI type 304 stainless steel, or better, for corrosion resistance and is to have 0.560" (+0.0", -0.02") sides. This bolt shall be positioned such that the padlock must be removed prior to

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unbolting and the bolt shall have an attached washer with a spring beneath (or similar approved provision) to facilitate the use of a penta socket for initially engaging the bolt. The three point latching system shall latch at the top, bottom and approximate middle of the door. The latching rods shall be restrained by guides designed to prevent any rod from falling into the interior of the compartment under conditions such as extreme over-rotation of the latch handle or loss of connection of the rod to the latch handle mechanism.

The high and low voltage compartments shall be open at the bottom where the unit is to sit upon the pad, with a resting flange ( $\frac{3}{4}$ " min. -  $1\frac{1}{2}$ " max.) around the outer perimeter as shown in Attachments 1A and 1B.

### 3.3.1.3 Door Sill

The unit shall be constructed with a removable cabinet sill under the doors to facilitate lifting, skidding or sliding of the unit into place without disturbing the entrance cables. Provisions for mounting three remote faulted circuit indicators on the transformer sill shall be provided as shown in Attachments 2A and 2B. These provisions shall be horizontally centered below the high voltage compartment door and each equipped with a cover which is removable only from the inside of the compartment. The covers and all exposed metal shall be painted in accordance with Section 3.5 of this standard.

### 3.4 Transformer Core Design

The core design shall be a wye connected five legged (or equivalent) core.

### 3.5 Painting and Coating

The coating of all exterior and interior exposed surfaces of the transformer shall meet the enclosure coating system requirements of ANSI C57.12.28. The unit shall have at least one coat of heavy duty corrosion resistant primer with a finish coat color of weather resistant green color, Munsell 7GY 3.29/1.5 or equivalent. The total paint thickness shall not be less than 3 mils. An additional corrosion resistant coating of the same color as the finish coat shall be applied to all surfaces in contact with 3" up from the mounting pad.

### 3.6 Dimensions

General dimensional details are shown on Attachments 1A and 1B of this standard.

### 3.7 High Voltage Connectors and Terminals

The electrical characteristics of the assembled high voltage connectors shall be as shown in Table E.

**Table E**

<b>Voltage Rating</b>	<b>BIL</b>	<b>60 Hz. One Minute Withstand</b>
4.16/2.4 kV	95 kV	34 kV
8.3/14.4 kV	95 kV	34 kV

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15.2/26.3 kV	125 kV	40 kV
21.1/36.6 kV	150 kV	50 kV

High voltage connections in transformers rated 23.9GrdY/13.8kV and below shall consist of approved universal bushing wells and bushing inserts. The universal bushing wells shall be mounted with an external flange using a three stud pattern arranged as shown on Attachment 1A. Bushing wells shall be equipped with removable copper bottom studs. High voltage 200A loadbreak bushing inserts shall be installed and supplied with the transformer. Approved universal bushing wells and bushing inserts are listed on Attachment 3.

High voltage connections on the 5000kVA, 13200GrdY/7620V transformers shall consist of 15kV class 600A deadbreak apparatus bushings in accordance with IEEE Standard 386, Figure 11, Interface #1. The 600A bushings shall be positioned as shown on Attachment 1A mounted with an external flange using a four stud pattern. Approved 600A bushings are listed on Attachment 3. The connection system shall be Push – Op, bolted type, externally replaceable.

High voltage connections in transformers rated 34.5GrdY/19.9kV shall consist of integral 21.1/36.6kV, three-phase rated 200A loadbreak bushings in accordance with Interface #1, Figure 8, of ANSI/IEEE Standard 386. The integral bushings shall be mounted with an external flange using a four stud pattern arranged as shown on Attachment 1B. Integral bushings shall be externally removable for replacement. Approved integral bushings are listed on Attachment 3.

Parking stands shall be provided in the high voltage compartment adjacent to the high voltage bushings as shown in Attachments 1A and 1B, and shall not project further than 1" from the faceplate of the transformer. Bushing wells, bushing inserts, integral bushings and parking stands shall comply with the requirements of ANSI C119.4 and ANSI/IEEE Standard 386. Suitable temporary covers shall be provided on all high voltage bushings for protection until the transformer is placed in service.

### **3.8 Primary Neutral**

The neutral end of the grounded wye connected primary coil shall be securely and permanently connected to the tank internally and shall be totally independent of all other connections.

### **3.9 High Voltage Fusing**

High voltage fuse protection shall consist of weak link fuse(s) in series with current limiting fuse(s) in accordance with Attachments 4A, 4B and 4C. Weak link fuse(s) shall be connected between the current limiting fuse(s) and the transformer coil as shown in



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Attachment 5. The transformer tank shall be adequate to withstand any gas pressures incidental to fuse operations at maximum rated interrupting capacity of the fuses. Bayonet holders shall be equipped with an internal valve to minimize oil spillage, have a minimum 200 amp continuous current rating and accommodate all applicable bayonet fuses listed in Attachments 4A, 4B and 4C. A permanently attached drip shield shall be provided under the bayonet fuse assemblies to prevent transformer oil from dripping on the separable connectors. Current limiting fuses are to be accessible via a hand hole or other approved means. All appropriate replacement weak link fuse(s) shown for that transformer in Attachment 4A, 4B or 4C shall be listed near the bayonet fuse assemblies using a legible decal or stenciling with 3/4" ( $\pm 1/4$ ") high yellow color letters.

In lieu of the internal high voltage fusing, the transformer may be equipped with a resettable three-phase gang operable fault interrupting device approved by the Standards and Engineering Services Department. Dual primary voltage transformers shall not be internally fused.

### 3.10 Lightning Arresters

Units with 34500GrdY/19920 primary coils shall be equipped with internal lightning arresters. Units shall be designed such that arresters fail electrically open in a manner which does not damage other components of the transformer. Lightning arresters shall be connected as shown in Attachment 5 and shall be accessible via a hand hole or other approved means. If required by manufacturer to isolate failed arresters, separate fuses shall be provided. Information on fuses in series with lightning arresters shall also be included on transformer nameplate. Approved 27kV arresters are listed in Attachment 3.

### 3.11 High Voltage Loadbreak Switch

Two high voltage, internally mounted, three pole, two position (open and closed) switches shall be provided. The switches shall have the same, or greater, voltage rating and BIL as the transformer primary. Other ratings shall be equal to or greater than the values shown in Table F.

**Table F**

<b>Primary Bushing</b>	<b>Continuous Current</b>	<b>Loadbreak/ Loadmake</b>	<b>Make and Latch</b>
200A	200A	200A	10kA RMS Sym.
600A	300A	300A	10kA RMS Sym.

Both switch handles shall be positioned horizontally inline with one another, above the appropriate primary bushings to which they are connected, and clearly identified as to which primary bushings they are connected. Switch handles shall also be positioned such as to enable operation with hot line tools with cables in place. All switch positions

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shall be clearly indicated with decals designating "OPEN" and "CLOSED" positions. Decal letters shall be 1" (+1/2", -00") high.

### 3.12 Low Voltage Connections and Terminals

Low voltage line and neutral bushings shall be rated for the full capacity of the transformer and arranged in staggered formation as shown on Attachment 1A and 1B. All low voltage bushings shall be field replaceable. Assembled low voltage bushings shall be 1.2 kV insulation class (30 kV BIL; 60 Hz. dry one minute withstand of 10 kV).

Cable terminations on low voltage bushings shall be tin plated copper flat spades drilled to NEMA standard spacing and arranged for vertical cable takeoff. The terminals shall generally conform to Figure 9 of ANSI C57.12.26. Table G lists the required minimum number of useable spade holes for the various kVA sizes and low voltage ratings.

**Table G**

<b>kVA Ratings</b>	<b>Low Voltage Ratings</b>	<b>Number of holes</b>
150 - 300	208Y/120; 480Y/277	6
500 - 750	208Y/120; 480Y/277	8
1000 - 1500	480Y/277	8
1000	208Y/120	10
2000	480Y/277	10
1500	208Y/120	16
2500 - 5000	480Y/277	16

Terminal spade holes on low voltage line bushings whose center is less than 6" from the faceplate of the tank shall not be considered useable and shall not be included in meeting the required minimum number of spade holes shown in Table G. A minimum distance of 6" shall be maintained between the low voltage compartment door when closed and the nearest edge of each terminal spade.

Terminal spades with eight or more holes shall be provided with insulated mechanical supports designed to support the terminal spades for both upward and downward forces. Insulated support material shall be NEMA grade GP0-01 or better. The spade support components shall not reduce the number of available connection holes and shall be easily removed and reassembled with and without cables connected to the spades. Spade support components shall be attached to the top of the spades in such a manner as not to restrict the use of extension plates on the spades.

The low voltage neutral ( $X_0$ ) shall be brought out on an insulated bushing and externally grounded with one or more removable copper ground strap(s) in order to allow for either grounded or ungrounded operation of secondary coils. The neutral shall be independent of all other connections throughout their entirety from transformer windings to the insulated bushing.

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Attachment of the copper ground strap(s) to the grounding pad provided for that connection (and separate from the tank grounding pads) shall be made with two hole terminal pads or flat straps. Holes utilized in attaching the grounding strap(s) to the neutral spade shall not be included in meeting the required minimum number of spade holes shown in Table G. The grounding strap(s) shall be sized for the short circuit rating of the transformer, as defined in ANSI C57.12.00, and shall also be no smaller in size (or cross sectional area equivalent) than shown in Table H.

**Table H**

<b>kVA Range</b>	<b>Low Voltage Rating</b>	<b>Copper Ground Cable</b>
150 - 300	208Y; 480Y	One 4/0 AWG
500 - 1000	208Y; 480Y	One 500 kcm
1500	208Y	Two 500 kcm
1500 - 2500	480Y	One 500 kcm
3000 - 5000	480Y	Two 500 kcm

### **3.13 Handling Provisions**

The unit shall contain lifting and handling provisions in accordance with Section 7.1 of ANSI C57.12.26.

### **3.14 Angular Displacement and Terminal Marking**

The angular displacement of wye-wye connected units shall conform to Figure 10(b) of ANSI C57.12.26. High voltage and low voltage terminals shall be designated in accordance with ANSI C57.12.26 and C57.12.70 using 1" (+1½", -00") high yellow color stenciled letters or decals.

### **3.15 Identification/Instruction Nameplate**

The transformer unit shall have a corrosion resistant metallic identification/instruction nameplate as per Section 7.4 of ANSI C57.12.26 permanently mounted in the low voltage compartment that shall be readable with cables in place. The nameplate shall include all data specified in Section 5.12 of ANSI C57.12.00, the high-voltage BIL, and true month and year date of manufacture. Date codes are not acceptable. The PCB content of the transformer insulating oil shall be included as part of the nameplate data.

### **3.16 Oil Preservation**

A sealed tank system as per Section 7.5 of ANSI C57.12.26 shall be standard on all transformers.

### **3.17 Pressure Relief**

A replaceable automatic pressure relief device, equipped with a pull ring for manual operation with a standard hookstick shall be provided and located in the low voltage compartment above the 140°C top oil level. The pressure relief device is to be the Qualitrol No. 201-020-01 or approved equivalent.

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### **3.18 Transformer Oil**

The transformer shall be filled with insulating oil certified as containing a PCB content of less than one part per million.

### **3.19 Tanks**

Tank construction shall conform to Section 7.6 of ANSI C57.12.26, except that a one inch NPT drain plug valve with built in sampling device, located in high voltage compartment approximately 6" from the high/low voltage barrier, shall be provided on all units. An oil fill plug shall be provided in the low voltage compartment as per Section 7.6.1 of ANSI C57.12.26. The tank shall be a minimum of 12 gauge sheet steel sufficient to withstand a minimum pressure of 7 psig, without permanent distortion.

### **3.20 Liquid-Level Indicator**

All transformers shall be equipped with a sight glass, located in the low voltage compartment.

### **3.21 Other Tank Accessories**

A sealed thermometer well and a plugged opening for a pressure-vacuum gauge shall be provided in the low voltage compartment of all units.

### **3.22 Access Handholes**

Handhole(s) shall be provided on the top of the tank with minimum size requirements of 12" x 24". The handhole(s) shall be located to allow for ease of access to the unit's internal current limiting fuses, lightning arresters, and primary and secondary bushing connections by maintenance workmen. Hardware securing the cover(s) of the handhole(s) shall be so arranged as to require entry into the transformer compartments to permit removal. A removable cover may be provided in lieu of a handhole(s) on units equipped with bayonet mounted weak link fuses.

### **3.23 Tank Grounding**

The tank grounding provisions shall conform to Section 7.6.4 of ANSI C57.12.26.

### **3.24 Bar Coding**

The unit shall have, either on the nameplate mounted in the low voltage compartment or on a permanent decal adjacent to the nameplate, an indelible bar code indicating the manufacturer's identification code and the unit's serial number in "3 of 9" format.

### **3.25 External Decals and Marking**

Permanent decals displaying an indelible unique equipment number shall be supplied and installed by the manufacturer on the outside of the cable compartment as shown in Attachment 2A, along with the transformer kVA, primary and secondary voltage ratings shall also be stenciled in 2" ( $\pm 1/4$ ") high yellow color letters, black on clear or black on silver decals above the large equipment number decal. The decal grouping shall be properly oriented and installed in the center of the low voltage compartment door. The small bar code decal shall be properly oriented and installed in the upper right corner of the low voltage cable compartment. The manufacturer shall

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also provide and install a temporary bar code decal adjacent to the small equipment number bar code decal displaying the manufacturer's identification code and the unit's serial number in "3 of 9" format.

A permanent NOTICE/ WARNING decal shall be supplied and installed by the manufacturer on the outside of the high voltage compartment door adjacent to the low voltage compartment door handle as shown in Attachment 2A. A DANGER decal shall be installed on the inside face of the primary voltage compartment as shown in attachments 1A and 1B.

### **3.26 Packing and Shipping**

Each transformer shall be shipped on an individual pallet or skids constructed of good material that extends at least 3" beyond the transformer on all sides. Units shall not be stacked and shall only be delivered on open bed trucks.

### **3.27 Information Furnished with Bid Proposals**

The manufacturer shall furnish outline and connection drawings and complete electrical and mechanical details with bid inquiry responses. The outline drawings shall include detailed dimensions, total weight and accessory locations for each kVA size and voltage rating. The manufacturer shall also furnish guaranteed average values for the following.

- No load losses at 100% rated voltage.
- Load losses at rated kVA and voltage.
- Percent impedance voltage at 85°C average winding temperature.
- Top oil time constant, hot spot conductor rise over top oil temperature and top oil rise over ambient temperature at rated load.

### **3.28 Manufacturer Design Changes**

Before design changes are made, the manufacturer shall provide 60 days written notice to the Standards and Engineering Services Department and obtain approval to bid such units in future inquiries.

### **3.29 Compliance Testing**

At the discretion of Entergy, the manufacturer is to test, at manufacturer expense, any unit(s) selected at random from units received by the company (and returned to manufacturer's test facility at company expense) to verify compliance with required or guaranteed performance values. The number of units so tested shall not exceed one per voltage class and kVA rating per year, provided each unit tested meets the values quoted by the manufacturer or required by specification.

### **3.30 Exceptions**

Manufacturers requesting any exception to this specification shall furnish drawings, test data and other applicable information required for the evaluation of the exception and

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obtain prior approval to submit bids. Failure to do so shall be assumed as acknowledgment of complete compliance with this specification.

#### 4.0 REFERENCES

Definitions, standards, and rules in the following document form part of this specification:

**NEMA Standard 260** - NEMA Standard for Safety Labels for Padmounted Switchgear and Transformers Sited in Public Areas

**IEEE Standard 386** - IEEE Standard for Separable Insulated Connector Systems for Power Distribution Systems Above 600V.

**IEEE C57.12.00** - General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers (ANSI)

**IEEE C57.12.26** - IEEE Standard for Pad-Mounted, Compartmental-Type, Self-Cooled, Three-Phase Distribution Transformers for Use With Separable Insulated High-Voltage Connectors (34 500 GrdY/19 920 Volts and Below; 2500 kVA and Smaller)

**ANSI C57.12.28** - ANSI Standard for Switchgear and Transformer - Pad-Mounted Equipment - Enclosure Integrity

**ANSI C57.12.70** - Terminal Markings and Connections for Distribution and Power Transformers

**IEEE C57.12.80** - Terminology for Power and Distribution Transformers (ANSI)

**IEEE C57.12.90** - Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers and Guide for Short-Circuit Testing of Distribution and Power Transformers (ANSI)

**IEEE C57.91** - Guide for Loading Mineral-Oil-Immersed Overhead and Pad-Mounted Distribution Transformers Rated 500 kVA and Less with 65°C or 55°C Average Winding Rise (ANSI)

**IEEE C57.98** - Guide for Transformer Impulse Test (ANSI)

**IEEE C57.100** - Test Procedure for Thermal Evaluation of Oil-Immersed Distribution Transformers (ANSI)

**ANSI C119.4** - ANSI Standard for Electrical Connectors - Connectors for Use Between Aluminum-to-Aluminum or Aluminum-to-Copper Bare Overhead Conductors

#### 5.0 RESPONSIBILITIES

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Entergy's Standards and Engineering Services Department is responsible for interpretation of this standard and approval of deviations from this standard.

## 6.0 ATTACHMENTS

**Attachments 1A & 1B** - Transformer faceplate arrangements.

**Attachment 2A & 2B** - External equipment decals/stenciling and remote faulted circuit indicator provisions.

**Attachment 3** - Approved high voltage components.

**Attachment 4A, 4B & 4C** - Fuse protection tables.

**Attachment 5** - Transformer connection diagrams.

## 7.0 REVISIONS

<b>Revision Number</b>	<b>Revised Sections/Subsections</b>	<b>Revision Date</b>
00	New Issue	6/15/95
01	Added larger kVA sizes and requirements, added NEMA safety label, modified sill dimensions, added NEMA liquid-level gauge.	9/22/97
02	Added 4 kV design parameters	9/1999
03	Eliminated internal full range fuse for 3000 kVA, 13.2 kV Padmount; and internal full range fuse for 3750 & 5000 kVA, 34.5 kV.	1/2000
04	Stated that dual voltage primary transformers are not to be internally fused.	12/2002
05	Specified label arrangement inside and outside of compartments	11/2004
06	Specify avoidance of cooling radiators on the right hand side of the padmount transformer looking from the front of the overall cable compartment. Specify 600 A dead front interface for 5000 kVA, 13.2 kV. Reinstated Drain Valve with Sampling Device. Show decal locations. Include HI 15/25 kV Bushing Well.	02/2007

## 8.0 ACKNOWLEDGMENTS

None.

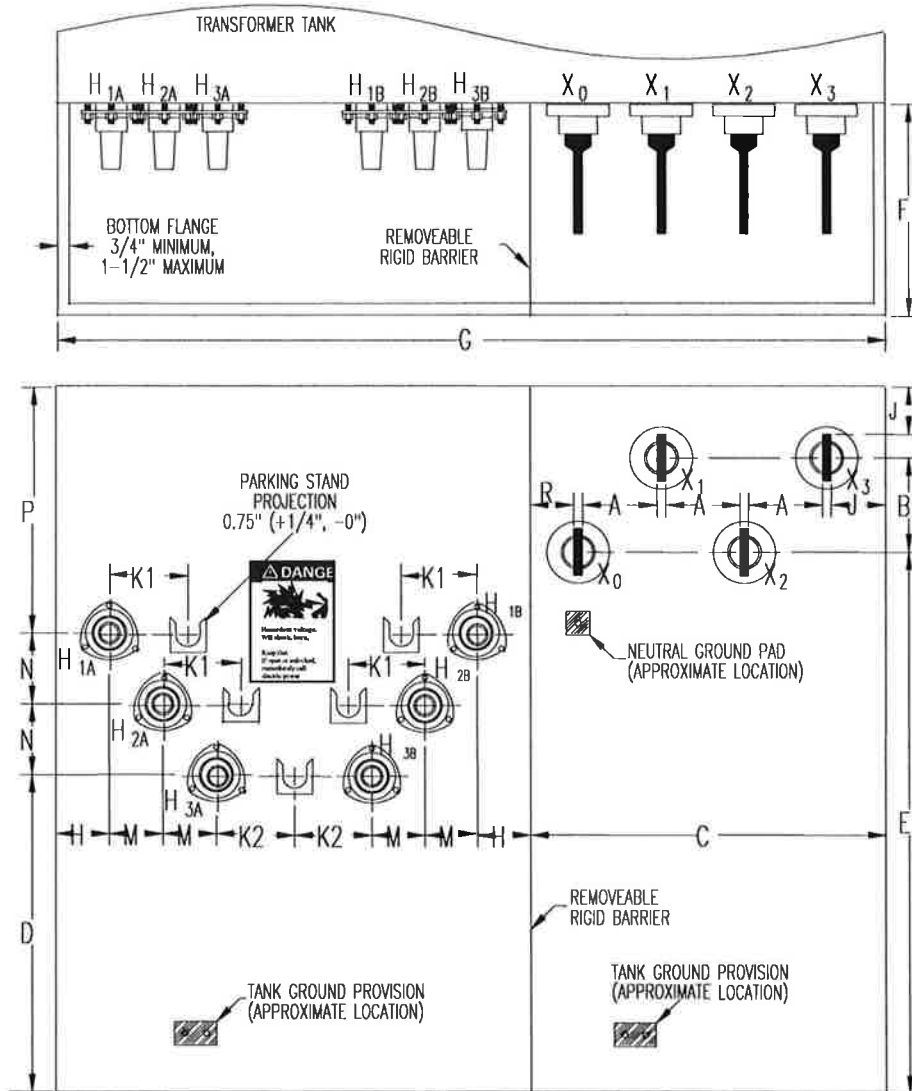
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### ATTACHMENT 1A

#### 23900GrdY/13800 Volts and below



Class	D	H	K1	K2	M	N	P
15kV	27"	3.5" min.	6.5"	5"	4.5"	6"	11" min.
25kV	27"	4.5" min.	6.5"	6.5"	4.5"	6"	14" min.

3Ø kVA	A	B	C	E	F	G	J	R
150	5"	6"	30" max.	31"	20" min.	70" max.	6" min.	4" min.
300-500	6"	8"	33" max.	31"	20" min.	73" max.	6" min.	4" min.
750-2500	6"	8"	35" max.	46"	23" min.	76" max.	7" min.	5" min.
3000	6"	8"	37" max.	46"	23" min.	78" max.	7" min.	5" min.

**NOTE:** Dimension tolerances are  $\pm 1/4"$  unless otherwise specified.



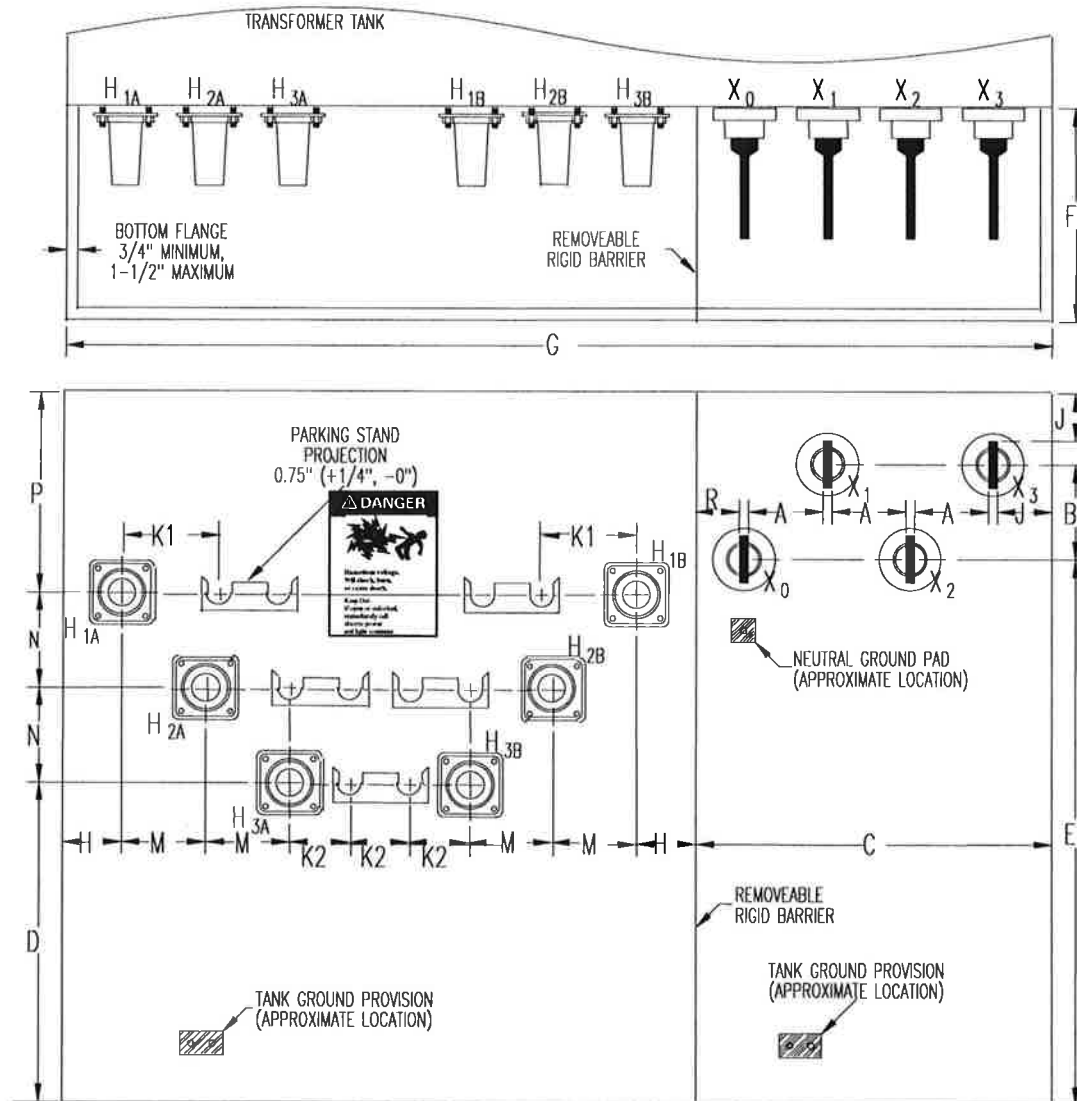
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### ATTACHMENT 1B

#### 34500GrdY/19920 Volts

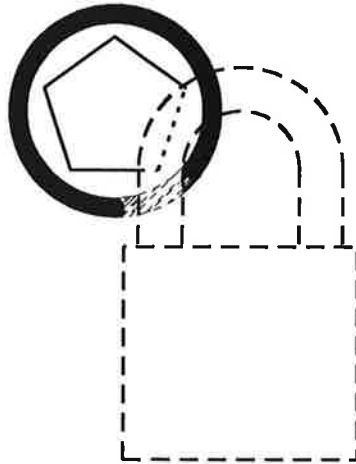


D	F	H	K1	K2	M	N	P
32"	21" min.	5" min.	8"	5"	7"	8"	20" min.

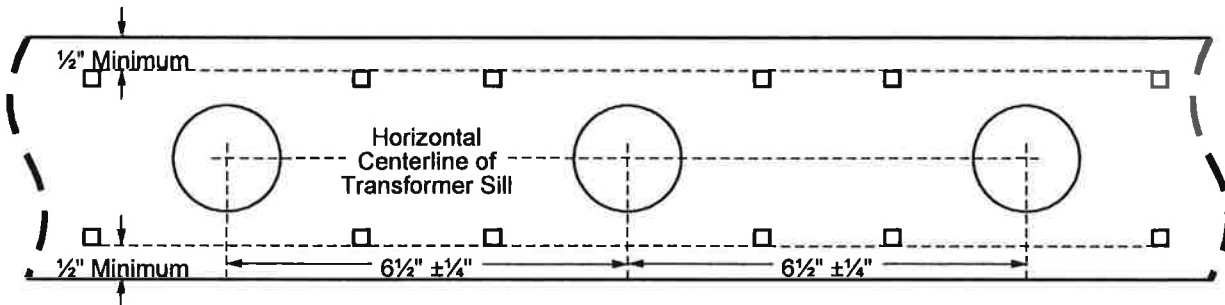
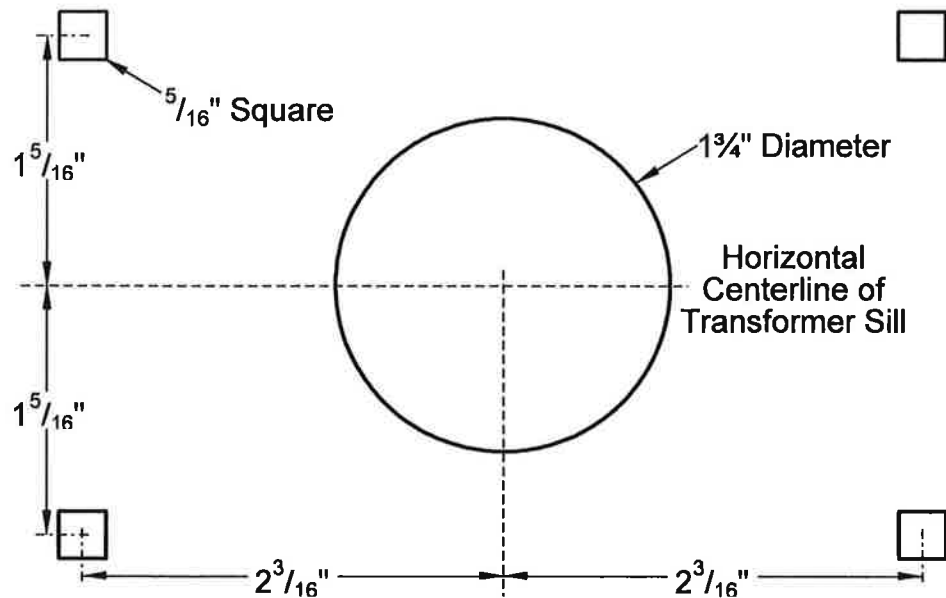
3Ø kVA	A	B	C	E	G	J	R
150	5"	6"	30" max.	31"	85" max	6" min.	4" min.
300-500	6"	8"	33" max.	31"	88" max	6" min.	4" min.
750-2500	6"	8"	35" max.	46"	91" max	7" min.	5" min.
3000-5000	6"	8"	37" max.	46"	93" max	7" min.	5" min.

**NOTE:** Dimension tolerances are  $\pm 1/4"$  unless otherwise specified.

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**ATTACHMENT 2A****External Equipment Decals/Stenciling and  
Faulted Circuit Indicator Provisions**

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**ATTACHMENT 2B****Remote Faulted Circuit Indicator Provisions****Positioning Details on Transformer Sill****Remote Indicator Drilling Details**

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**ATTACHMENT 3****Approved High Voltage Components****Bushing Wells****15/25kV Class****95kV BIL; 125kV BIL**

ABB - 4956B93H01  
 Central Moloney - 701911-71  
 Central Moloney - 701915-71  
 Cooper - 2603973B02R  
 Elastimold - K1601PC-S1-R  
 GE - 9U03BSB003  
 Howard Industries – 0066-100272-451

**15kV Class, 95 kV BIL, 600 A Bushings**

Cooper 2637604C01G

**Bushing Inserts****15kV Class; 95kV BIL**

CEC - 9U02AAB001  
 Cooper - 2604797B01M  
 Cooper - LBI215  
 Elastimold - 1601A4

**25kV Class; 125kV BIL**

CEC - 9U02BAB001  
 Cooper - 2637612C01M  
 Cooper - LBI225  
 Elastimold - 2701A4

**Integral Bushings****35kV Class; 150kV BIL**

Cooper - 2637024C01GC  
 GE - 9U02DBC003

**27kV Internal Lightning Arresters**

Cooper - AZU100L027  
 GE - 9L25CUK133

<b>TITLE: Padmounted Three-Phase Loop-Feed Transformers, 5000kVA and Smaller, 480 Volts and Below</b>	<b>STANDARD NUMBER: DE03-05, Rev. 06</b>	<b>EFFECTIVE DATE: February, 2007</b>
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**ATTACHMENT 4A**

**13200GrdY/7620 Volts  
FUSE PROTECTION TABLES**

<b>3Ø kVA Rating</b>	<b>Bayonet Fuses</b>	
	<b>Cooper</b>	<b>Kearney</b>
150	4038108C06	124080-12
300	4038108C09	124080-25
500	4038108C11	124080-30
750	4038108C12	124080-35
1000	4000358C12 <sup>1</sup>	-
1500	4000358C14 <sup>1</sup>	-
2000	4038361C05CB <sup>3</sup>	-
2500	4038361C05CB <sup>3</sup>	-
3000	-	-

<b>3Ø kVA Rating</b>	<b>Current Limiting Fuses</b>			
	<b>Cooper</b>	<b>G. E.</b>	<b>Hi-Tech</b>	<b>Kearney</b>
150	3543050M61M	9F59TBC040	HTDS23X035	150608-50
300	3543100M51M	9F59TBC065	HTDS23X065	150608-65
500	3543125M61M	9F59TBC100	HTDS23X100	150608-100
750	3543125M61M	9F59TBC100	HTDS23X100	150608-100
1000	-	9F59TCC150	HTDS33X165	150608-150*
1500	-	9F59TCC125 <sup>^</sup>	HTDS33X300*	-
2000	-	9F59TCC150 <sup>^</sup>	HTDS33X300*	-
2500	-	9F59TCC150 <sup>^</sup>	HTDS33X300*	-
3000	83F200-SX <sup>4</sup>	-	-	-

**NOTES:** All bayonet fuse links are dual element weak link (D.E.W.L.) fuses unless otherwise noted.

\* Catalog number depicts parallel fuses.

<sup>^</sup>Catalog number depicts single fuse. Two fuses required in parallel.

<sup>1</sup> Dual sensing bayonet fuse link.

<sup>3</sup> High ampere overload bayonet fuse link (Reference manufacturer's requirements for silver plated contacts in bayonet assembly).

<sup>4</sup>~~Full range submersible current limiting fuse.~~

<b>TITLE: Padmounted Three-Phase Loop-Feed Transformers, 5000kVA and Smaller, 480 Volts and Below</b>	<b>STANDARD NUMBER: DE03-05, Rev. 06</b>	<b>EFFECTIVE DATE: February, 2007</b>
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**ATTACHMENT 4B**

**23900GrdY/13800 Volts  
FUSE PROTECTION TABLES**

<b>3Ø kVA Rating</b>	<b>Bayonet Fuses</b>	
	<b>Cooper</b>	<b>Kearney</b>
150	4038108C04	124080-06
300	4038108C06	124080-12
500	4038108C07	124080-15
750	4038108C09	124080-25
1000	4038108C11	124080-30
1500	4038108C12	124080-35
2000	4000353C16 <sup>2</sup>	-
2500	4000358C14 <sup>1</sup>	-
3000	4000358C14 <sup>1</sup>	-

<b>3Ø kVA Rating</b>	<b>Current Limiting Fuses</b>			
	<b>Cooper</b>	<b>G. E.</b>	<b>Hi-Tech</b>	<b>Kearney</b>
150	3544040M61M	9F59TBD040	HTDS24X035	150615-40
300	3544050M61M	9F59TBD040	HTDS24X035	150615-50
500	3544080M51M	9F59TBD065	HTSS242065	150615-50
750	3544100M51M	9F59TBD065	HTSS242065	150615-50
1000	3544100M51M	9F59TBD080	HTSS242100	150615-80
1500	3544175M51M	9F59TCD100	HTDS24X100	150615-100*
2000	3544150M51M <sup>^</sup>	9F59TCD125 <sup>^</sup>	HTDS34X200	-
2500	-	9F59TCD125 <sup>^</sup>	HTDS34X300*	-
3000	-	9F59TCD150 <sup>^</sup>	HTDS34X300*	-

**NOTES:** All bayonet fuse links are dual element weak link (D.E.W.L.) fuses unless otherwise noted.

\* Catalog number depicts parallel fuses.

<sup>^</sup> Catalog number depicts single fuse. Two fuses required in parallel.

<sup>1</sup> Dual sensing bayonet fuse link.

<sup>2</sup> Current sensing bayonet fuse link.

<b>TITLE: Padmounted Three-Phase Loop-Feed Transformers, 5000kVA and Smaller, 480 Volts and Below</b>	<b>STANDARD NUMBER: DE03-05, Rev. 06</b>	<b>EFFECTIVE DATE: February, 2007</b>
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**ATTACHMENT 4C**

**34500GrdY/19920 Volts  
FUSE PROTECTION TABLES**

<b>3Ø kVA Rating</b>	<b>Bayonet Fuses</b>	
	<b>Cooper</b>	<b>Kearney</b>
150	4038108C03	124080-05
300	4038108C05	124080-08
500	4038108C06	124080-12
750	4038108C07	124080-15
1000	4000353C12 <sup>2</sup>	-
1500	4000353C12 <sup>2</sup>	-
2000	4000353C14 <sup>2</sup>	-
2500	4000353C16 <sup>2</sup>	-
3000	4000353C16 <sup>2</sup>	-
3750	-	-
5000	-	-

<b>3Ø kVA Rating</b>	<b>Current Limiting Fuses</b>			
	<b>Cooper</b>	<b>G. E.</b>	<b>Hi-Tech</b>	<b>Kearney</b>
150	3545030M61M	9F59TBE040	HTDS351040	150621-30
300	3545040M61M	9F59TBE040	HTDS251040	150621-50
500	3545065M51M	9F59TBE050	HTDS251050	150621-50
750	3545065M51M	9F59TBE050	HTDS251050	150621-50
1000	-	9F59TBE065	HTDS251065	150621-65
1500	3545065M51M <sup>^</sup>	-	-	150621-80
2000	3545080M51M <sup>^</sup>	-	-	-
2500	3545150M51M <sup>^</sup>	-	-	-
3000	3545150M51M <sup>^</sup>	-	-	-
3750	23F100-SX <sup>4</sup>	-	-	-
5000	23F100-SX <sup>4</sup>	-	-	-

**NOTES:** All bayonet fuse links are dual element weak link (D.E.W.L.) fuses unless otherwise noted.

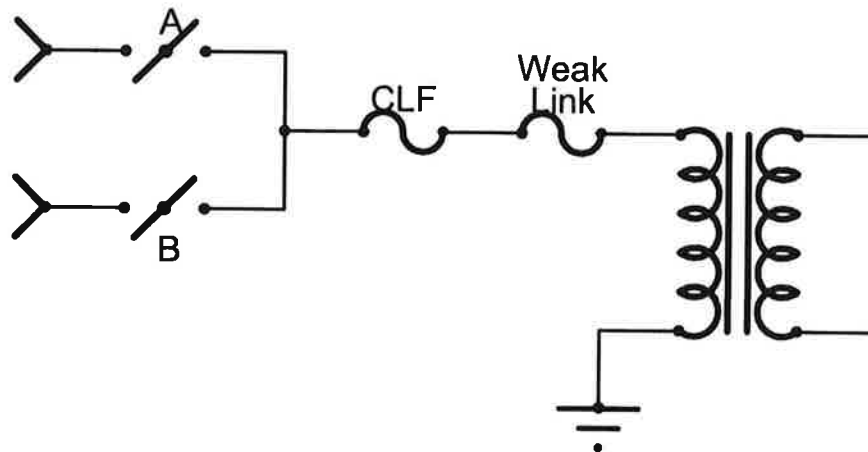
<sup>^</sup> Catalog number depicts single fuse. Two fuses required in parallel.

<sup>2</sup> Current sensing bayonet fuse link.

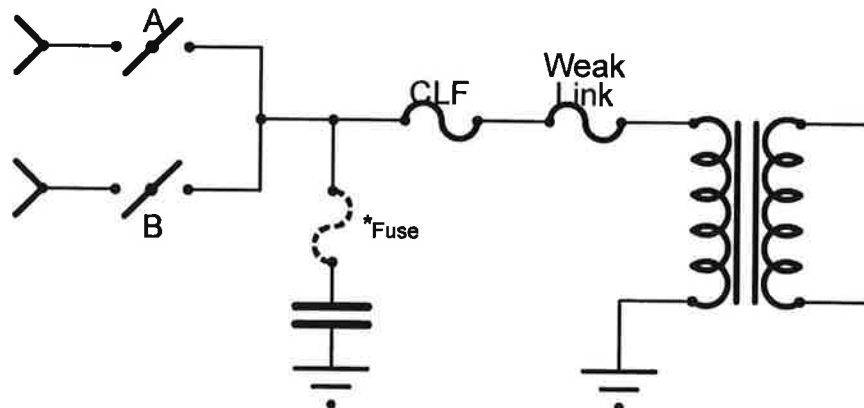
<sup>4</sup> ~~Full range submersible current limiting fuse.~~

<b>TITLE: Padmounted Three-Phase Loop-Feed Transformers, 5000kVA and Smaller, 480 Volts and Below</b>	<b>STANDARD NUMBER: DE03-05, Rev. 06</b>	<b>EFFECTIVE DATE: February, 2007</b>
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**ATTACHMENT 5**  
**Transformer Connection Diagrams**



**23900GrdY/13800 Volts and below**



**34500GrdY/19920 Volts**

**\*NOTE:** 34.5GrdY/19.92kV transformers shall be equipped with internal lightning arresters designed to fail electrically open in a manner which does not damage other components of the transformer. If provided by the manufacturer, fuses required to isolate failed lightning arresters shall not be in series with transformer coil. Information on fuses in series with lightning arresters shall also be included on transformer nameplate.



### Transformer vendors and contacts familiar with Entergy transformers

Howard Industries  
Tommy Hodson  
225-767-7420  
thodson@jthagencies.com


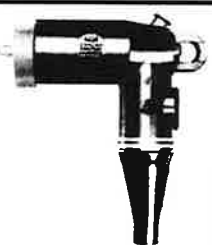

Cooper Power  
Earl Everett  
903-268-3178  
eeverette@cooperpower.com

Central Moloney  
Scott Aertker  
504-469-0136  
saertker@aertkerco.com

Entergy  
David Christian  
318-329-5518  
318-366-6408  
dchris@entergy.com



## ENTERGY SERVICES DISTRIBUTION STANDARDS

TITLE: <b>Separable Insulated Connectors - 200A</b>		STANDARD NUMBER: <b>DM01-01, Rev. 06</b>		EFFECTIVE DATE: <b>07/2009</b>
PREPARED BY: <b>William G Schmidt</b> <b>DISTRIBUTION STANDARDS</b>		APPROVED BY: <b>James R. Hickman,</b> <b>MANAGER OF STANDARDS AND ENGINEERING SERVICES</b>		
STOCK NUMBER	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NUMBER	ILLUSTRATION
<b>EN000511</b> <b>Replaces:</b> AR114-254 LP331-2750 LP331-2765 PS331-2750 MP501-5390 CSP QKCJA	Connector, High Voltage, Molded, Elbow, Loadbreak, 8.3/14.4kV, #2 AWG, <b>Additional Information:</b> Compressed AL or CU, 175 mil or 220 mil insulated, jacketed or unjacketed concentric neutral cable. Insulation O.D. range: 0.665" - 0.815". Per Entergy Specification DM01-04, latest revision. <b>Application Information:</b> For 15kV facilities utilizing #2 AWG, 15kV UG primary cable.	Chardon Electric  Cooper Power  Elastimold	9U01AAD623  <del>LE215A04TX</del> LEJ215A04TX  166LR-B-5220 166LRJS-B-5220	
<b>EN013562</b> <b>Replaces:</b> AR114-302 LP331-2766 PS-(None) MP501-5389* CSP QKCJL	Connector, High Voltage, Molded, Elbow, Loadbreak, 8.3/14.4kV, 1/0 AWG, <b>Additional Information:</b> Compressed AL or CU, 175 mil or 220 mil insulated, jacketed or unjacketed concentric neutral cable. Insulation O.D. range: 0.74" - 0.89". Per Entergy Specification DM01-04, latest revision. <b>Application Information:</b> For maintenance of existing 15kV facilities utilizing 1/0 AWG, 15kV UG primary cable.	Chardon Electric  Cooper Power  Elastimold	9U01AAD635  <del>LE215B06TX</del> LEJ215B06TX  166LR-B-5240 166LRJS-B-5240	
<b>EN013589</b> <b>Replaces:</b> AR-(None) LP331-2769 PS-(None) MP501-5415* CSP QKCJK	Connector, High Voltage, Molded, Elbow, Loadbreak, 8.3/14.4kV, 1/0 AWG, <b>Additional Information:</b> 345 mil insulated (35kV rated cable), compressed AL or CU, jacketed or unjacketed concentric neutral cable. Insulation O.D. range: 1.08" - 1.14". Per Entergy Specification DM01-04, latest revision. <b>Application Information:</b> For maintenance of existing 15kV facilities utilizing 1/0 AWG, 35kV UG primary cable.	Chardon Electric  Cooper Power  Elastimold	9U01AAD665  <del>LE215D06TX</del> LEJ215D06TX  166LR-D-5240 166LRJS-D-5240	

\* - Denotes obsoleted stock code (Approved for use, Do not repurchase).  
**Strikethrough** - Denotes deleted information.  
**Shading** - Denotes added or changed information.  
M0101.DOC



## DISTRIBUTION UNIVERSITY STANDARDS & ENGINEERING SERVICES ELECTRIC & GAS STANDARDS

**Material, Electric**

Standard Number: **DM01-04, Rev. 01**

Page 1 of 5

<b>TITLE: Separable Insulated Connectors - Detailed Specification</b>	<b>EFFECTIVE DATE: May, 1998</b>
<b>PREPARED BY:</b> <b>Blaine P. Gremillion,</b> <b>Standards &amp; Engineering Services</b>	<b>APPROVED BY:</b> <b>J. Demis Soleibe,</b> <b>Manager of Standards &amp; Engineering Services</b>

## 1.0 INTRODUCTION

### 1.1 Purpose

This standard presents Entergy's technical specifications for the manufacture of separable insulated connector components to be utilized on its underground primary systems.

### 1.2 Scope

**1.2.1** This standard establishes ratings, tests, and specific construction of phase-to-phase rated load-break and dead-break 8.3/14.4 kV, 15.2/26.3 kV and 21.1/36.6 kV separable connectors (hereinafter referred to as elbows).

**1.2.2** All elbows shall meet the applicable requirements of the latest revision of ANSI/IEEE Standard 386, Separable Insulated Connector Systems for Power Distribution Systems Above 600V (hereinafter referred to as the ANSI/IEEE Standard), unless stated otherwise in this standard.

## 2.0 DEFINITIONS

**ANSI** - American National Standards Institute

**Bi-Metallic Connector** - Also referred to as a 'copper-top' connector. Consists of threaded copper head friction welded to aluminum alloy compression barrel.

**Dead-break Connector (Elbow)** - Also referred to as a non-load-break elbow. An elbow designed to be separated and engaged on de-energized circuits only.

**Elbow** - A connector component for connecting a power cable to a bushing, so designed that when assembled with the bushing, the axes of the cable and bushing are perpendicular.

**IEEE** - Institute of Electrical and Electronics Engineers

**Interchangeability** - The ability for a component of one manufacturer to be utilized with a component from another manufacturer and meet all applicable requirements of the ANSI/IEEE Standard and this standard.

**Standards & Engineering Services****Material, Electric**Standard Number: **DM01-04, Rev. 01**

<b>TITLE: Separable Insulated Connectors - Detailed Specification</b>	<b>EFFECTIVE DATE: May, 1998</b>
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**Load-break Connector (Elbow)** - An elbow designed to close and interrupt load current on energized circuits.

**Operating Interface** - The surfaces at which a connector is normally separated.

**Probe** - Male contact pin of the separable connector.

**Separable Insulated Connector** - Also referred to as an elbow. A fully insulated and shielded system for terminating and electrically connecting an insulated power cable to electrical apparatus, other power cables, or both, so designed that the electrical connection can be readily established or broken by engaging or separating the connector at the operating interface.

### **3.0 DETAILS**

#### **3.1 Electrical Characteristics**

**3.1.1** The phase-to-ground/phase-to-phase voltage rating and characteristic of all elbows shall be in accordance with Table 1 of the ANSI/IEEE Standard.

**3.1.2** The continuous and switching current rating and characteristic of all elbows shall be in accordance with Table 2 of the ANSI/IEEE Standard.

**3.1.3** All load-break elbows shall have a fault-closure current rating of 10,000 amperes (RMS, symmetrical) for a duration of 0.17 seconds.

**3.1.4** The short-time current rating of all elbows shall be in accordance with Table 2 of the ANSI/IEEE Standard.

**3.1.5** All elbows shall have complete interchangeability as defined in Paragraph 6.4.1 of the ANSI/IEEE Standard.

**3.1.6** Completed 200A elbow-bushing assemblies shall meet the requirements of both Options A and B of Paragraph 7.10 of the ANSI/IEEE Standard.

**3.1.7** Completed 600A elbow-bushing assemblies shall meet the requirements of Paragraph 7.11 of the ANSI/IEEE Standard.

#### **3.2 Construction**

**3.2.1** The interface and probe dimensions for the 8.3/14.4kV, 200A load-break elbow shall be in accordance with Figures 5 and 6 of the ANSI/IEEE Standard.

**Standards & Engineering Services****Material, Electric**Standard Number: **DM01-04, Rev. 01**

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**TITLE: Separable Insulated Connectors -  
Detailed Specification****EFFECTIVE DATE:  
May, 1998**

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**3.2.2** The interface dimensions for the 15.2/26.3kV, 200A load-break elbow shall be in accordance with Figure 7 of the ANSI/IEEE Standard.

**3.2.3** The interface dimensions for the 21.1/36.6kV, 200A load-break elbow shall be in accordance with Interface #1, Figure 8 of the ANSI/IEEE Standard.

**3.2.4** When designated for maintenance of existing facilities, 8.3kV dead-break elbows in accordance with Figure 4, and 21.1/36.6kV load-break elbows in accordance with Figure 7, Interface #2, of the ANSI/IEEE Standard will be allowed.

**3.2.5** 600A separable connector components shall be in accordance with the ANSI/IEEE Standard.

**3.2.6** Applicable voltage ratings, current ratings, manufacturer's identification and date of manufacture shall be legibly shown on the outer surface of the elbow in accordance with Paragraph 6.1 of the ANSI/IEEE Standard.

**3.2.7** All elbows shall have a molded, semi-conductive ground shield in accordance with Paragraph 6.3 of the ANSI/IEEE Standard. Shield shall be approximately 100 mils thick and be equipped with provisions for connecting an external ground wire.

**3.2.8** Insulation used in the construction of all elbows shall be a peroxide cured EPDM compound.

**3.3 Miscellaneous**

**3.3.1** The threaded portion of the 200A elbow's probe shall be equipped with  $\frac{3}{8}$ "-16 UNC threads. Probe threads shall have a thread lead or pilot at their beginning with a  $\frac{1}{8}$ " minimum length. This pilot end shall not project into the conducting rubber core of the elbow when installed in the compression connector. The purpose of the pilot end is to align the male contact pin with the compression connector before engaging the threads.

**3.3.2** The compression connector must meet the requirement of Paragraph 7.9 of the ANSI/IEEE Standard. All elbows shall be provided with bi-metallic type connector equipped with copper thread end and aluminum alloy compression end. 15kV and 25kV 200A elbows shall be provided with long barrel bi-metallic connector. The appropriate compression tool and die information shall be printed or embossed on the connector. Connector shall be prefilled with a synthetic oxide inhibitor.

**3.3.3** The wire wrench provided with 200A elbows to tighten the male contact pins (probes) into the bi-metallic connectors shall provide a minimum torque of 75 inch-pounds before becoming permanently deformed. Maximum torque to deform the wrench shall be 150 inch-pounds.

**Standards & Engineering Services  
Material, Electric**Standard Number: **DM01-04, Rev. 01**

<b>TITLE: Separable Insulated Connectors - Detailed Specification</b>	<b>EFFECTIVE DATE: May, 1998</b>
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**3.3.4** Silicone grease shall be included in the separable connector kit and shall be equivalent to Dow Corning 111 silicone grease.

**3.3.5** Manufacturer's installation instructions shall be included in the kit. A template shall be included for measuring the correct amount of insulation shield and insulation to be removed from the cable.

**4.0 REFERENCES**

Definitions, standards, and rules in the following document form part of this specification:

**ANSI/IEEE Standard 386**, IEEE Standard for Separable Insulated Connector Systems for Power Distribution Systems Above 600V.

**5.0 RESPONSIBILITIES****5.1 Test Reports**

Manufacturer shall submit up-to-date certified test reports of the ANSI/IEEE Standard tests and the additional information requested in this standard to Entergy's Standards and Engineering Services Department. The manufacturer shall also provide a list of the other manufacturers and their components with which the elbow has complete interchangeability.

**5.1.2 Inspection**

The manufacturer shall, upon request, permit the purchaser to examine material at any stage of production and allow the purchaser to perform any inspections or witness any retests he deems necessary to ascertain whether the product conforms to specified requirements.

**5.2 Interpretation**

The Entergy Standards and Engineering Services Department is the final authority in the interpretation of this standard.

**5.3 Deviation**

Manufacturer shall be responsible for supplying only elbows and components that have been approved for use by Entergy's Standards and Engineering Services Department. Any re-design, modification or change to any of the elbow components shall require re-approval by Entergy's Standards and Engineering Services Department prior to use.

**6.0 ATTACHMENTS**

None.

**7.0 REVISIONS**

**Standards & Engineering Services****Material, Electric**Standard Number: **DM01-04, Rev. 01**

<b>TITLE: Separable Insulated Connectors - Detailed Specification</b>	<b>EFFECTIVE DATE: May, 1998</b>
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<b>Revision Number</b>	<b>Revised Sections/Subsections</b>	<b>Revision Date</b>
00	New Issue	11/01/94
01	Reformatted & removed paragraph on test points.	05/98

**8.0 ACKNOWLEDGMENTS**

None.



**SUPPORT SERVICES**  
**Distribution Standards & Engineering**  
**DO0203, Rev. 03**

**Title: Transformer Rated Meter Socket**

**Effective Date: 1/2004**

**Prepared By: Alex Royal**

Standards & Engineering Services

**Approved By: James R. Hickman**

Manager of Distribution Standards & Engineering

## **1.0 Introduction**

### **1.1 Purpose**

These guidelines establish standard criteria for transformer rated meter sockets used in the Entergy system.

### **1.2 Scope**

This specification applies to 4 terminal 3 wire 1Ø (Maintenance Only); 8 terminal 3 wire 3Ø and 3 wire 1Ø; 13 terminal 4 wire 3Ø pre-wired transformer rated meter sockets.

## **2.0 Definitions**

**Meter socket** - An enclosure which has jaws to accept the blade terminals of a watthour meter and connection terminals for circuit conductors.

**Ringless meter socket** - A meter socket that does not have a sealing ring to secure the watthour meter in place. The meter is held in place by the cover which is secured in place by a latch.

**Enclosure** - The housing including covers which the socket and test switches are attached.

**Split Socket Cover** - The removable portion of the enclosure that provides access to the meter socket internal wiring. This will consist of an upper and lower cover.

**Test Switch** - The 4(Maintenance Only), 7, or 10 pole front-connected device which permits safe and easy measurements to be made in the current and voltage circuits without disturbing the permanent wiring.

## **3.0 Details**

### **3.1 General**

All general requirements, ratings, definitions, and terminology, except as covered in this specification, shall be in accordance with the latest revision of ANSI C12.7, UL- 414, Entergy Corporation standard DO04-04, and Entergy Corporation standard DO04-01.



**ENTERGY DISTRIBUTION STANDARDS**

<b>TITLE:</b>	<b>Transformer Rated Meter Socket</b>	<b>STANDARD NUMBER:</b>	<b>EFFECTIVE DATE:</b>
		<b>DO0203, Rev. 03</b>	<b>01/2004</b>

**3.2 Enclosure****3.2.1 General**

The socket enclosure shall be a NEMA type 3R, rain tight, and have suitable drainage provisions. It shall be a minimum of 16 gauge G90 steel. The finish shall be a minimum 3 mil Munsel 5BG 7.0/0.4(ANSI 70) gray enamel. The socket enclosure shall be of the ringless type design. ~~The enclosure shall have a 1 inch removable hub installed on the top center prior to shipment. The hub opening shall be able to accept a standard hub closing plate.~~

**3.2.2 Knockouts**

The enclosure shall have six 1", 1-1/4", and 1-1/2" concentric knockouts. There shall be a knockout on the lower portion of each side, and a knockout in the center back of the enclosure. The bottom of the enclosure shall have three knockouts which are equally spaced with respect to the sides. Knockouts shall be so constructed that any size knockout may be removed without disturbing the next larger size. In addition, a separate 1/4" - 1/2" conduit knockout will be provided on the bottom for grounding conductors.

**3.2.3 Mounting**

Enclosure shall be provided with at least six mounting bosses, three across the top and three across the bottom, to provide a minimum of 3/16" of air space between the back of the socket and the surface on which it is mounted.

**3.2.4 Dimensions**

The overall dimensions of the meter socket enclosure shall be a minimum of 12" wide x 20" high x 4-3/8" deep.

**3.2.5 Enclosure Cover**

~~Enclosure covers, shall consist of an upper and a lower cover. The upper cover will be screwed down to the center crossbar support of the enclosure. The bottom cover will be equipped with a stainless steel latch to provide a means for sealing. Once the bottom cover is locked/sealed, neither the top nor the bottom cover shall be removeable. The inside of the bottom cover will have a insulated material over the test switch area.~~

**ENTERGY DISTRIBUTION STANDARDS**

TITLE: <b>Transformer Rated Meter Socket</b>	STANDARD NUMBER: <b>DO0203, Rev. 03</b>	EFFECTIVE DATE: <b>01/2004</b>
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**3.2.6 Hub Closing Plate**

All transformer rated meter sockets shall be equipped with a Hub Closing Plate installed from the manufacturer.

**3.2.7 Enclosure Decal**

Enclosure covers shall have a warning decal installed between the meter socket and bottom of meter cover (See figure 2). The decal will read as follows:

**“CAUTION – This is a Transformer Rated Meter. Removing meter does NOT interrupt electrical service to this building. Removing this meter under load may be hazardous”**

**3.3 Socket Jaws**

The socket jaws shall be copper or copper alloy and shall be silver plated or tin plated after fabrication. The socket jaws shall be capable of carrying 20 amperes continuously and withstanding the mechanical and heat rise requirement of ANSI/UL 414. Current circuit conductors shall connect to the jaws with a spade compression type lug.

**3.4 Potential Connection Terminals**

All potential wire terminals shall be tin plated aluminum alloy or copper brazed seam, uninsulated compression ring type. Conductors will be attached to the ring terminal such that a pull test of reasonable force will not separate the conductor from the terminal.

**3.5 Wiring**

The wiring between the socket and test switch shall be a 12 AWG, type THHN, stranded copper conductor rated at 600 volt. All conductors will be color coded per figure 1 page 5 of this specification. The wiring of conductors shall be done neatly and in a good workman like manner.

**3.6 Test Switches**

Only approved test switches, as listed in the Entergy Specification DO04-04, are to be used. The test switch will be mounted in the lower half of the enclosure, fastened securely to a mounting bracket, such that the lower cover cannot be installed until the switch blades are fully closed. This test switch shall be mounted as to allow passage of conductors and or cable between the back of the enclosure and the bracket.

**3.7 Miscellaneous**

**ENTERGY DISTRIBUTION STANDARDS**

<b>TITLE:</b>	<b>Transformer Rated Meter Socket</b>	<b>STANDARD NUMBER:</b>	<b>EFFECTIVE DATE:</b>
		<b>DO0203, Rev. 03</b>	<b>01/2004</b>

**3.7.1 Identification**

The Entergy company name, shall be permanently stamped in the front, lower right, corner of the bottom cover.

**3.7.2 Grounding**

All sockets will be equipped with a two conductor grounding lug, attached to the bottom inside lower right corner of the enclosure. No connection shall be made between this grounding lug and the test switch.

**3.7.3 Labels**

Socket shall have an approved label which notes that removal of this meter will not disconnect the electric service.

**4.0 References**

ANSI C12.7 Definitions and requirements for watthour-meter sockets rated 600 volts or less and up to 320 amps continuous duty.

U.L. 414 Requirements for watthour-meter sockets for installation in accordance with the National Electrical Code.

DO02-04 Entergy specification listing approved material for this specification.

DO04-04 Entergy specification for transformer rated, watt-hour meter, test switches.

DO04-01 Entergy standard metering color code specification.

**5.0 Responsibilities**

The Manager of Standards and Engineering Services is responsible for the interpretation, compliance and/or granting of any deviations from this standard.

**6.0 Revisions**

**ENTERGY DISTRIBUTION STANDARDS**

<b>TITLE: Transformer Rated Meter Socket</b>	<b>STANDARD NUMBER: DO0203, Rev. 03</b>	<b>EFFECTIVE DATE: 01/2004</b>
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Revision Number	Revised Sections/Subsections	Revision Date
01	<b>Reviewed spec and updated</b> "Prepared by" and "Approved by". <b>Section 1.2</b> – Added "Maintenance Only". <b>Section 2.0</b> - Added "Maintenance Only". <b>Section 3.1</b> – Changed DR06-01 to DO04-01. <b>Section 3.2.6</b> – This is a new section. <b>Section 4.0</b> – Changed DR06-01 to DO04-01.	02/2003
02	<b>Section 3.2.7</b>	01/2004
03	<b>Section 3.2.1 Removed the following verbage:</b> The enclosure shall have a 1 inch removable hub installed on the top center prior to shipment. The hub opening shall be able to accept a standard hub closing plate.	01/2004

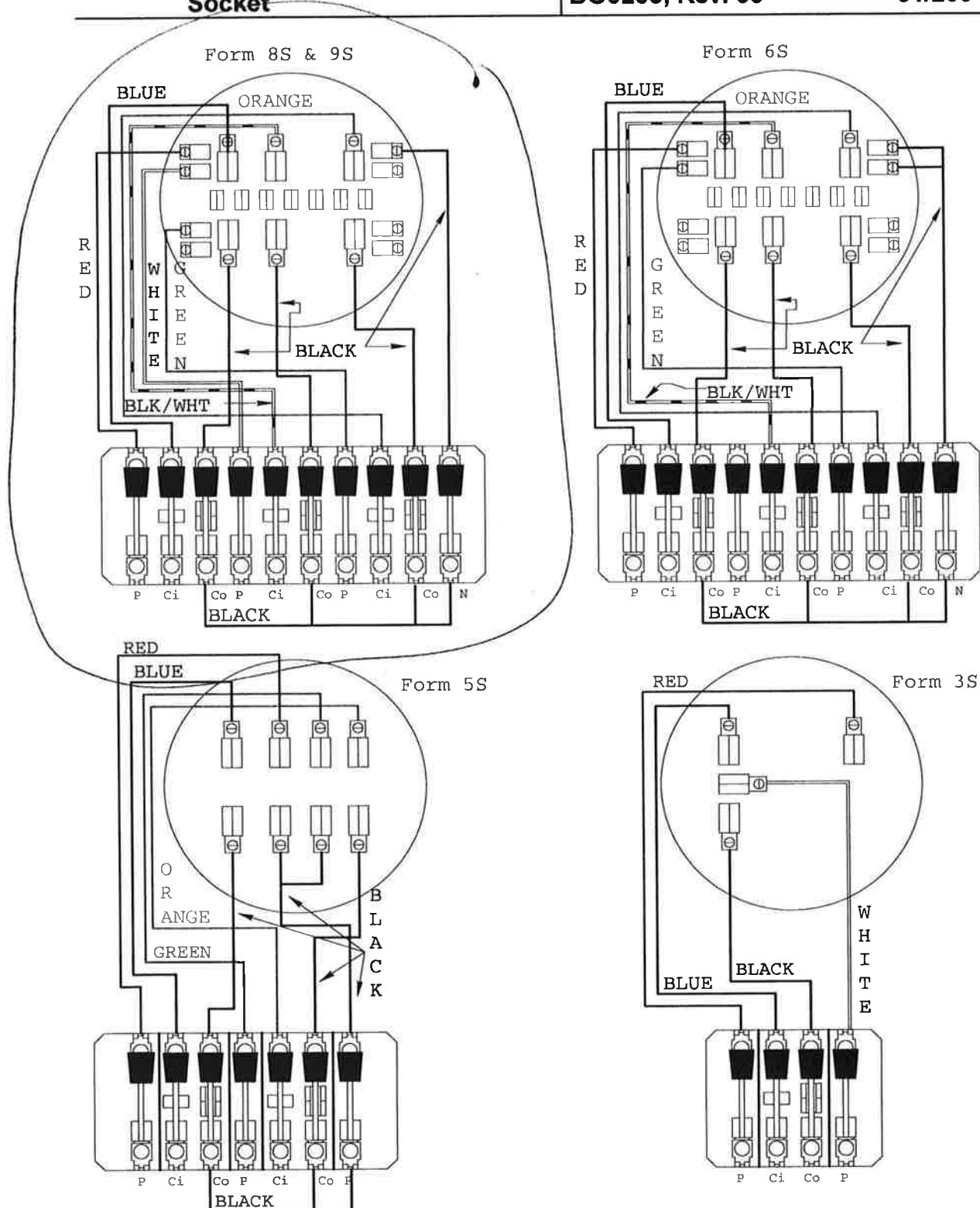
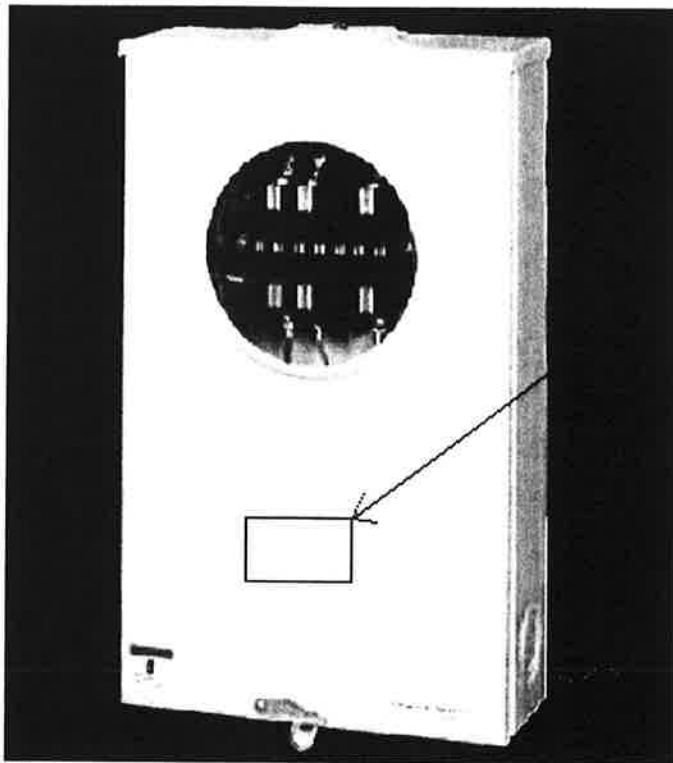
**ENTERGY DISTRIBUTION STANDARDS****TITLE: Transformer Rated Meter Socket****STANDARD NUMBER:  
DO0203, Rev. 03****EFFECTIVE DATE:  
01/2004**

Figure 1.

**ENTERGY DISTRIBUTION STANDARDS**

<b>TITLE:</b>	<b>Transformer Rated Meter Socket</b>	<b>STANDARD NUMBER:</b>	<b>EFFECTIVE DATE:</b>
		<b>DO0203, Rev. 03</b>	<b>01/2004</b>



**CAUTION**

**THIS IS A TRANSFORMER RATED METER.  
Removing meter does NOT interrupt electrical  
service to this building. Removing this meter  
under load may be hazardous.**

Figure 2.

<b>EN012079</b> <b>REPLACES</b> *AR144-122 LP334-4020 PS334-4020 EN334-4020 MP NONE *CEP 3NKMM *CEP 3NPMM	Transformer rated meter socket, 13 terminals, prewired with 10 pole test switch, for 3 phase 4 wire delta or wye services. Sockets shall meet the requirements of Entergy specification DO02-03.	Milbank Meter Devices	S7445-XL-Z151-ENT 602-3010C13-359	

\* Denotes obsoleted stock code

PURCHASE DESCRIPTION	MANUFACTURER	CATALOG NUMBER	ILLUSTRATION
Transformer, Current: padmount, 600 V 10kV BIL, 400:5A ratio: Accuracy = 0.30 at 0.20 ohm burden, rating factor = 4.0, with Guides to mount CT onto secondary spade terminals. Instrument transformers shall meet the provisions of Entergy DO03-04	ABB GEC Durham Schlumberger General Electric Ritz	CMV 7524A75G03 AP4 603N R6P 923550001-300 JAB-O 750X136204 DCDW1106010110085	
Transformer, Current: padmount, 600 V 10kV BIL, 1000:5A ratio: Accuracy = 0.30 at 0.50 ohm burden, rating factor = 2.0, with guides to mount CT onto secondary spade terminals. Instrument transformers shall meet the provisions of Entergy DO03-04	ABB GEC Durham Schlumberger General Electric Ritz	CMV 7524A75G06 AP10 607 R6P 923550005-300 JAB-O 750X136210 DCDW1106010110088	
Transformer, Current: padmount, 600 V 10kV BIL, 2000:5A ratio: Accuracy = 0.30 at 1.80 ohm burden, rating factor = 1.5, with guides to mount CT onto secondary spade terminals. Instrument transformers shall meet the provisions of Entergy DO03-04	ABB GEC Durham Schlumberger General Electric Ritz	CMV 7524A75G09 AP20 610 R6P 923550008-300 JAB-O 750X136220 DCDW1106010110091	
Transformer, Current: padmount, 600 V 10kV BIL, 3000:5A ratio: Accuracy = 0.30 at 1.80 ohm burden, rating factor = 1.33, with guides to mount CT onto secondary spade terminals. Instrument transformers shall meet the provisions of Entergy DO03-04	ABB GEC Durham Schlumberger General Electric Ritz	CMV 7524A75G10 AP30 611 R6P 923550009-300 JAB-O 750X136230 DCDW1106010110092	
Transformer, Current: padmount, 600 V 10kV BIL, 4000:5A ratio: Accuracy = 0.30 at 1.80 ohm burden, rating factor = 1.0, with guides to mount CT onto secondary spade terminals. Instrument transformers shall meet the provisions of Entergy DO03-04	ABB GEC Durham Ritz	CMV 7524A75G11 AP40 612 DCDW1106010110093	





**Entergy**
**DISTRIBUTION UNIVERSITY  
STANDARDS & ENGINEERING SERVICES  
ELECTRIC STANDARDS**

 Page 858 of 1082  
 Headline: -0.45",  
 First line: 0.45"

TITLE: <b>Potential Transformers, 600 Volts</b>	STANDARD NUMBER: <b>DO03-03, Rev. 08</b>	EFFECTIVE DATE: <b>August, 2010</b>
PREPARED BY: <b>Alex Royal</b> <b>Distribution</b>	APPROVED BY: <b>James R. Hickman</b> <b>Manager of Standards and Engineering Services</b>	

**Standards**

STOCK NUMBER	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NUMBER	ILLUSTRATION
<b>EN015698</b> <b>REPLACES</b> AR294-113 LP427-7040 PS427-7040 MP851-4513 MP851-4514 MP851-8658 MP851-8696 GLCEP4TABU TGCEP4TABU	Transformer, Potential, 2.5:1 Ratio, 300:120V 600V Accuracy = 0.30 at W, X, M, & Y Burdens, 10 KV BIL, With compression type terminals. Transformers will be pre-numbered. <b>This material is to maintain            existing facilities using 2.5:1 potential            transformers.</b>	ABB ASTRA GE SCHLUMBERGER Ritz	7526A10G03 DA2.5 1004 JVA-O 760X0134602 TR7 923590251-300 DVF-61206010140134	



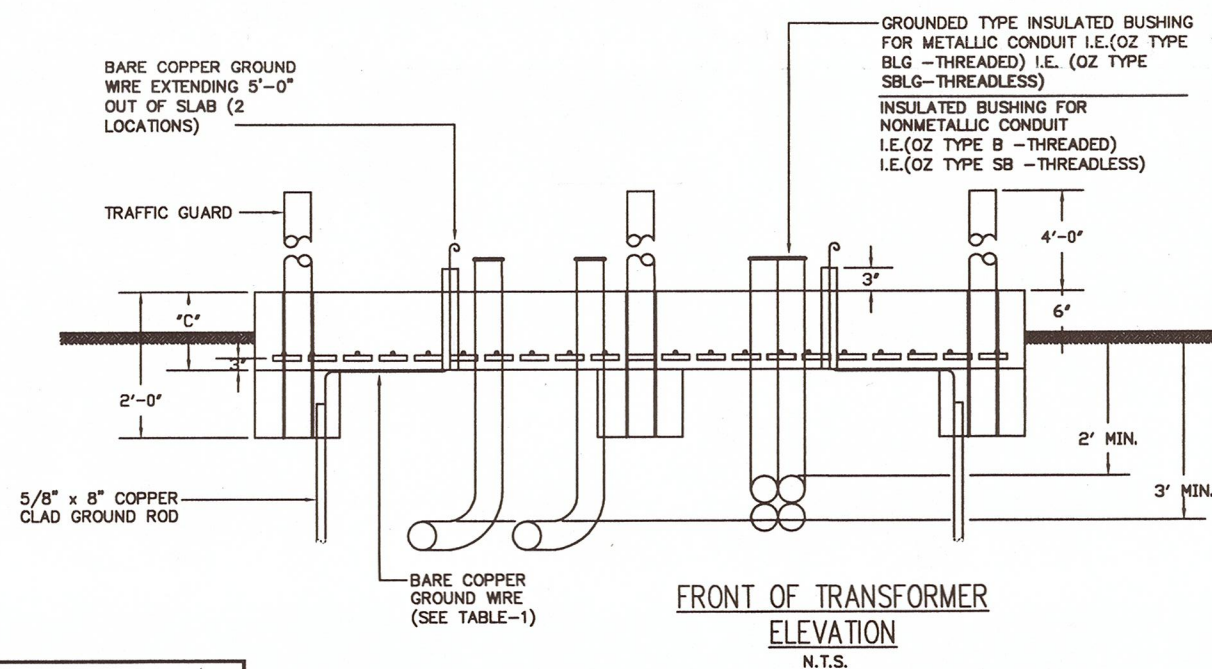
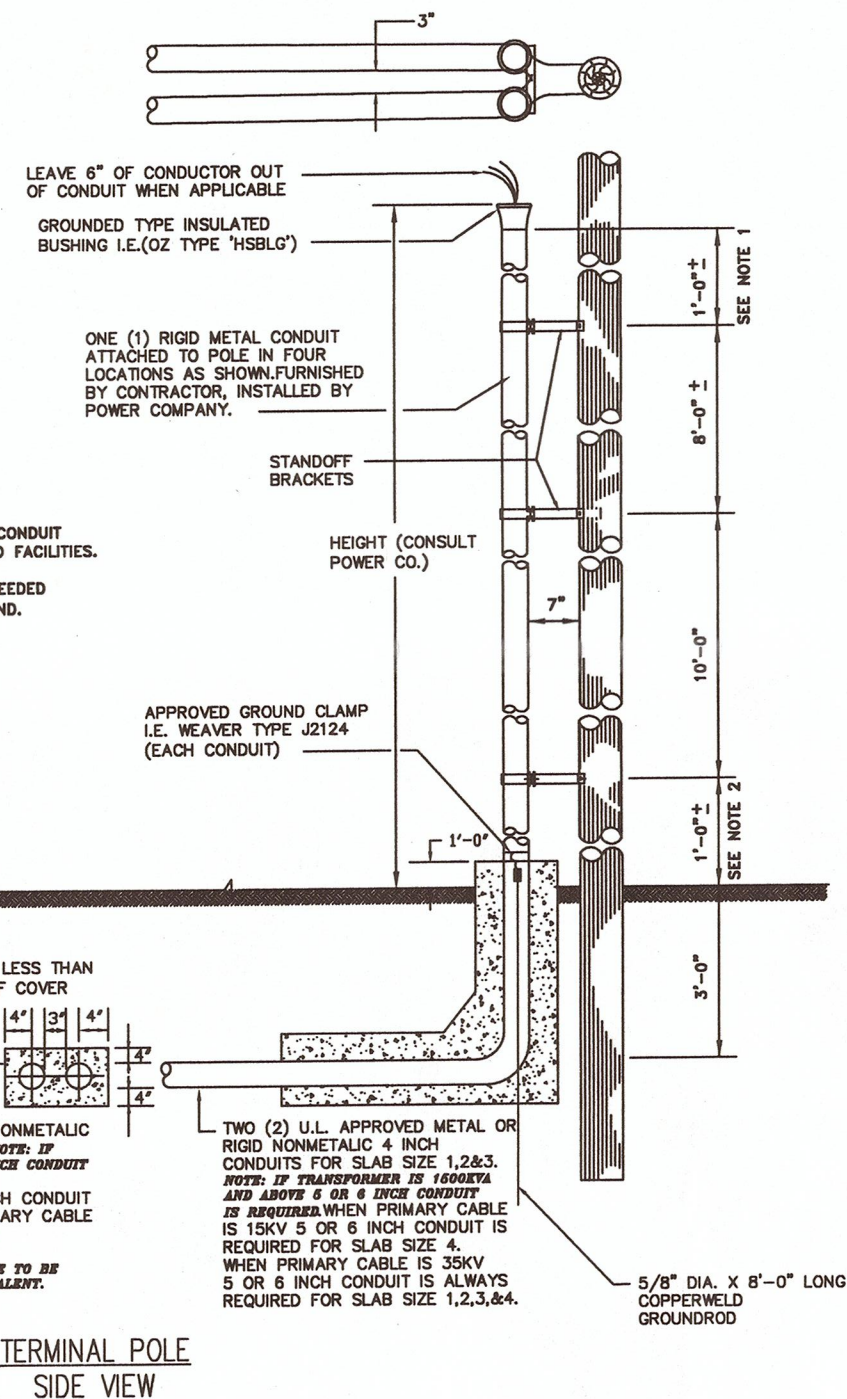
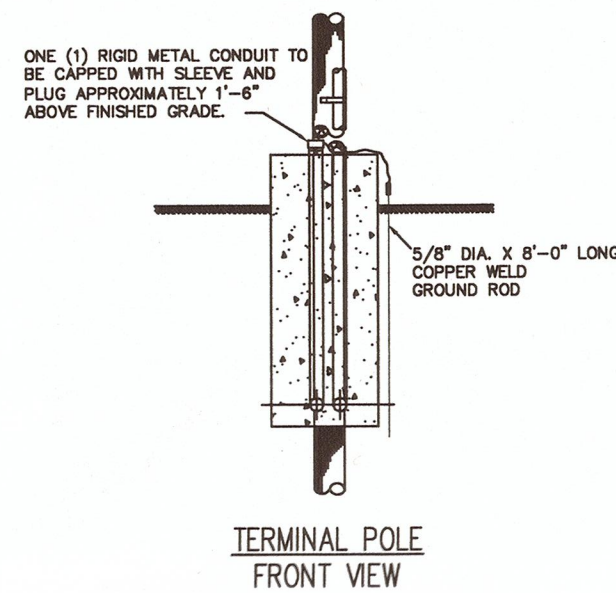
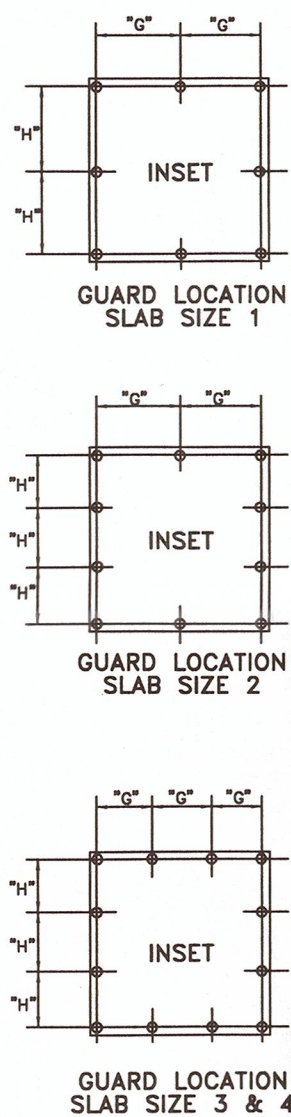
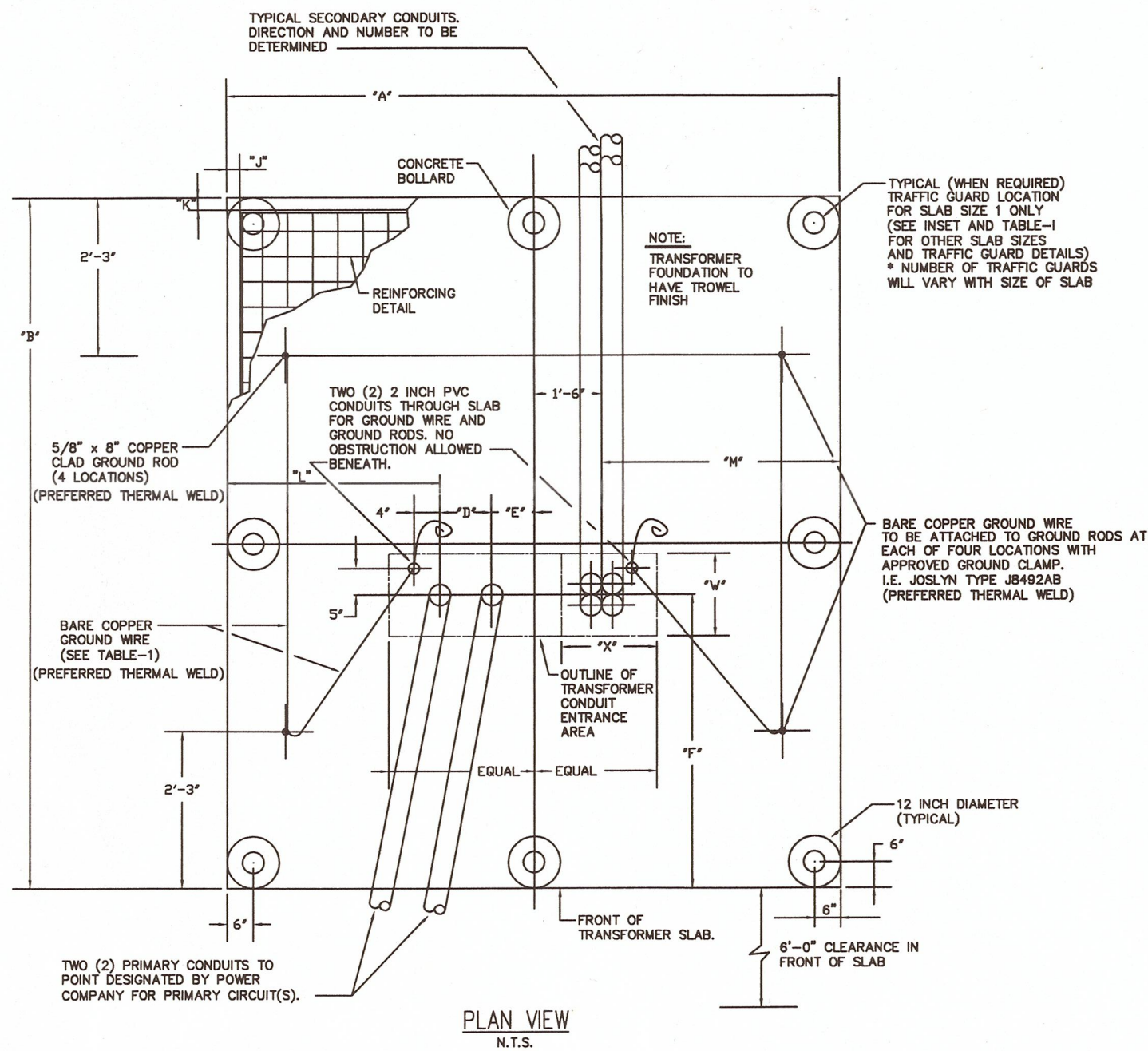


TABLE - I

SLAB SIZE	KVA	"A"	"B"	"C"	* TYPE I				* TYPE II				TRAFFIC GUARDS	COPPER GROUND WIRE SIZE ALL VOLTAGES	REBAR DIA.	REBAR SPACING	"J"	"K"	WEIGHT (1000lb.)	TRANSFORMER	SLAB TOTAL	* TYPE I				* TYPE II			
					"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"										"L"	"M"	"N"	"O"	"P"	"Q"	"R"	"S"
1	150 300	9'-2"	11'-0"	8"	6"	10"	1'-1"	6"	4'-8"	3	4'-1"	3	5'-0"	1/0 AWG	5/8"	6"	4"	3"	7	12	19	3'-3"	3'-1"	3'-0"	3'-1"				
2	500 750	9'-8"	12'-3"	8"	6"	10"	1'-1"	7"	4'-10"	3	4'-4"	4	3'-9"	1/0 AWG	5/8"	6"	4"	4 1/2"	12	14	26	3'-6"	3'-4"	3'-2"	3'-4"				
3	1000 1500	12'-0"	13'-6"	10"	6"	10"	1'-1"	8"	5'-5"	4	3'-8"	4	4'-2"	1/0 AWG	3/4"	9"	4 1/2"	1 1/2"	19	21	40	4'-8"	4'-6"	4'-3"	4'-6"				
4	2000 2500 3750	13'-0"	15'-6"	10"	6"	12"	1'-1"	9"	6'-0"	4	4'-0"	4	4'-10"	1/0 AWG	3/4"	6"	3"	3"	29	26	55	5'-0"	5'-0"	4'-8"	5'-0"				

TABLE - II

TRANSFORMER SIZE	TOTAL SECONDARY CONDUIT AREA	
	"W"	"X"
150KVA	18"	22 1/2"
300/500/750KVA	18"	25 1/2"
1000 & 1500KVA	18"	25 1/2"
2000, 2500 & 3750KVA	18"	30 1/2"

\* TYPE I -- IS A RADIAL PRIMARY FEED TYPE TRANSFORMER  
\* TYPE II -- IS A LOOP PRIMARY FEED TYPE TRANSFORMER

#### REQUIREMENTS FOR THREE PHASE TRANSFORMER SLAB

- THE CONTRACTOR MUST COORDINATE THE TRANSFORMER SELECTION SLAB SIZE, CONDUIT SIZE AND NUMBER, AND CONDUCTOR SIZE WITH POWER COMPANY.
- AT LEAST TWO DAYS NOTICE SHALL BE PROVIDED TO POWER CO. PRIOR TO POURING OF CONCRETE TO ALLOW INSPECTION OF INSTALLATION BY POWER CO. REPRESENTATIVE.
- CLEARANCES**  
A. A MINIMUM OF 6FT CLEARANCE SHALL BE PROVIDED AT THE FRONT OF THE TRANSFORMER SLAB.  
B. CLEARANCES BETWEEN OIL FILLED EQUIPMENT AND BUILDINGS, STRUCTURES, ETC., MUST FOLLOW ALL APPLICABLE CODES. COORDINATE WITH POWER COMPANY.  
C. WHEN METERING IS TO BE INSTALLED AT THE TRANSFORMER, A MINIMUM CLEARANCE OF 30 INCHES FROM THE SLAB SHALL BE PROVIDED ON THE SECONDARY SIDE.  
D. CLEARANCE FROM CONDUITS TO OTHER UTILITIES, I.E. GAS, WATER, SEWER, ETC., MUST FOLLOW ALL APPLICABLE CODES.
- FENCES**  
SEE POWER CO. ELECTRIC STANDARDS 10.2 FOR ADDITIONAL INFORMATION.  
A. FENCES SHALL NOT BE INSTALLED ON THE TRANSFORMER SLAB.  
B. DETAILS FOR PROPOSED FENCES, ACCESS GATES AND / OR REMOVABLE PANELS MUST BE COORDINATED WITH POWER CO.
- CONDUIT**  
SEE POWER CO. ELECTRIC STANDARDS 8.10 FOR ADDITIONAL INFORMATION.  
A. CONDUIT ELBOWS SHALL HAVE A MINIMUM RADIUS OF 24" FOR 2 1/2" AND 3" CONDUIT AND A MINIMUM RADIUS OF 36" FOR CONDUIT LARGER THAN 3".  
B. SECONDARY CONDUITS MUST BE INSTALLED WITHIN THE SECONDARY CONDUIT AREA DIMENSIONS GIVEN IN TABLE II. CONSULT THE ENGINEERING DEPARTMENT IF YOU EXCEED THE SECONDARY AREA DIMENSIONS.  
C. A MAXIMUM OF EIGHT (8) CONDUITS MAY CONTAIN CABLES. ANY NUMBER OF CONDUITS EXCEEDING EIGHT (8) SHALL BE SPARE CONDUITS ONLY AND SHALL NOT BE FILLED WITH CABLES.
- CONDUCTORS**  
SEE POWER CO. ELECTRIC STANDARDS 8.11 & 8.12 FOR ADDITIONAL INFORMATION.  
A. A MAXIMUM OF EIGHT (8) CONDUCTORS PER PHASE MAY BE INSTALLED IN THE TRANSFORMER SECONDARY CABLE COMPARTMENT.  
B. LENGTH OF WIRE, PROPER CONNECTION AND PHASE ROTATION IS THE RESPONSIBILITY OF CONTRACTOR.  
C. NO EXTRA CABLE (SEE NATIONAL ELECTRIC CODE 310-4, PARALLEL CONDUCTORS) WILL BE ALLOWED IN SECONDARY COMPARTMENT.
- TERMINATION'S**  
SEE POWER CO. ELECTRIC STANDARDS 8.12 FOR ADDITIONAL INFORMATION.  
A. INSTALL NEMA STANDARD TERMINALS ON ALL CONDUCTORS.
- CONCRETE**  
A. CONCRETE FOR SLAB TO BE 3000 PSI COMPRESSIVE STRENGTH.

#### 9. SLAB FOUNDATION SUPPORT

- SEE POWER CO. ELECTRIC STANDARDS 8.10 FOR ADDITIONAL INFORMATION.  
A. THE FOUNDATION DESIGN MUST HAVE THE SIGNED APPROVAL OF THE POWER CO. REPRESENTATIVE.  
B. ONE COPY OF THE PLAN FOR THE TRANSFORMER SLAB INSTALLATION AND FOUNDATION DESIGN MUST BE FILED WITH POWER CO. / ENGINEER OR REPRESENTATIVE PRIOR TO CONSTRUCTION OF SLAB.

#### 10. TRAFFIC GUARDS (BOLLARDS)

- A. TRAFFIC GUARDS (BOLLARDS) WHEN REQUIRED BY POWER CO. SHALL BE 4 INCH GALVANIZED STEEL PIPE, CONCRETE FILLED, 6 FEET IN LENGTH AND INSERTED IN 5 INCH GALVANIZED STEEL PIPE SLEEVES INSTALLED IN THE TRANSFORMER SLAB. THE 4 INCH PIPE SHALL BE REMOVABLE.

#### 11. NOTE:

- A. ANY DEVIATION FROM THESE REQUIREMENTS MUST HAVE THE WRITTEN APPROVAL OF THE POWER COMPANY ENGINEERING DEPARTMENT.

#### GENERAL REQUIREMENTS FOR THREE PHASE TRANSFORMER SLAB

- CONTRACTOR TO INSTALL SLAB COMPLETE WITH ALL PRIMARY & SECONDARY CONDUIT RUNS, PRIMARY CONDUITS ON POWER CO. POLE, SECONDARY CONDUITS, SECONDARY TERMINALS ON SECONDARY CONDUITS & PULL STRING IN PRIMARY CONDUIT UNLESS OTHERWISE SPECIFIED. CUSTOMER TO OWN ABOVE PARTS UNLESS OTHERWISE SPECIFIED.
- POWER CO. TO CONNECT SECONDARY TERMINALS TO TRANSFORMER UNLESS OTHERWISE SPECIFIED.
- POINT OF SERVICE TO BE WHERE SECONDARY CONDUCTORS TERMINATE ON TRANSFORMER SECONDARY TERMINALS UNLESS OTHERWISE SPECIFIED.
- POWER CO. TO INSTALL PAD MOUNT TRANSFORMER, ONE 3-PHASE UNDERGROUND PRIMARY CIRCUIT WITH NEUTRAL, PRIMARY POTHEADS ON POLE & METERING UNLESS OTHERWISE SPECIFIED.



STANDARD 13.8KV AND 23.9KV  
THREE PHASE PAD MOUNTED  
TRANSFORMER SLAB

ENTERGY  
P.O. BOX 38803  
WEST MONROE, LA. 71294-8803

SCALE: NONE  
DATE: 06/28/2001  
DRAWN BY: RHB  
CHECKED BY:  
TRACED BY: CKJ  
APPROVED BY:

NO. EN9235



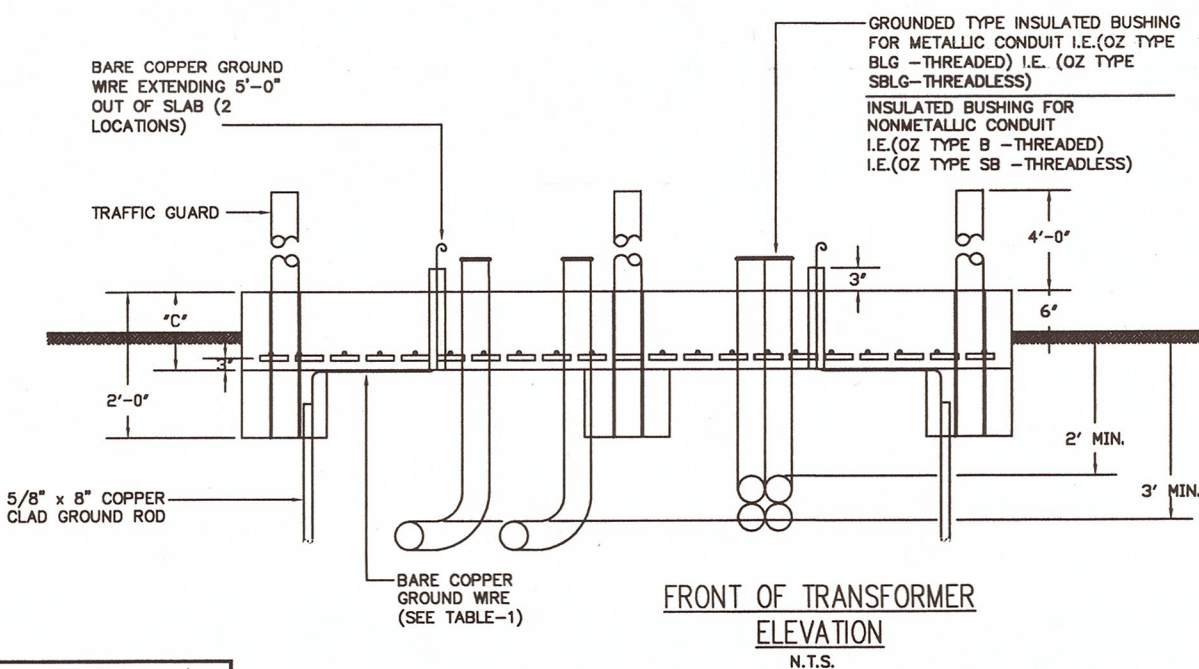
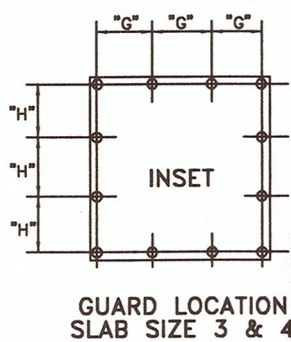
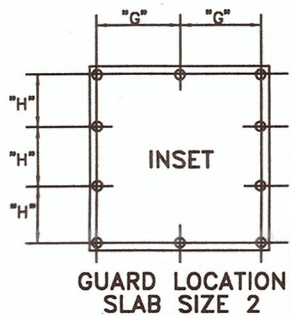
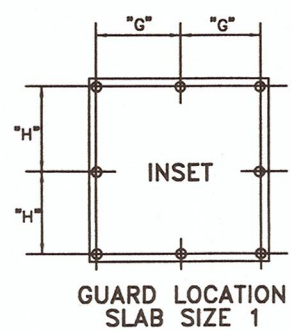
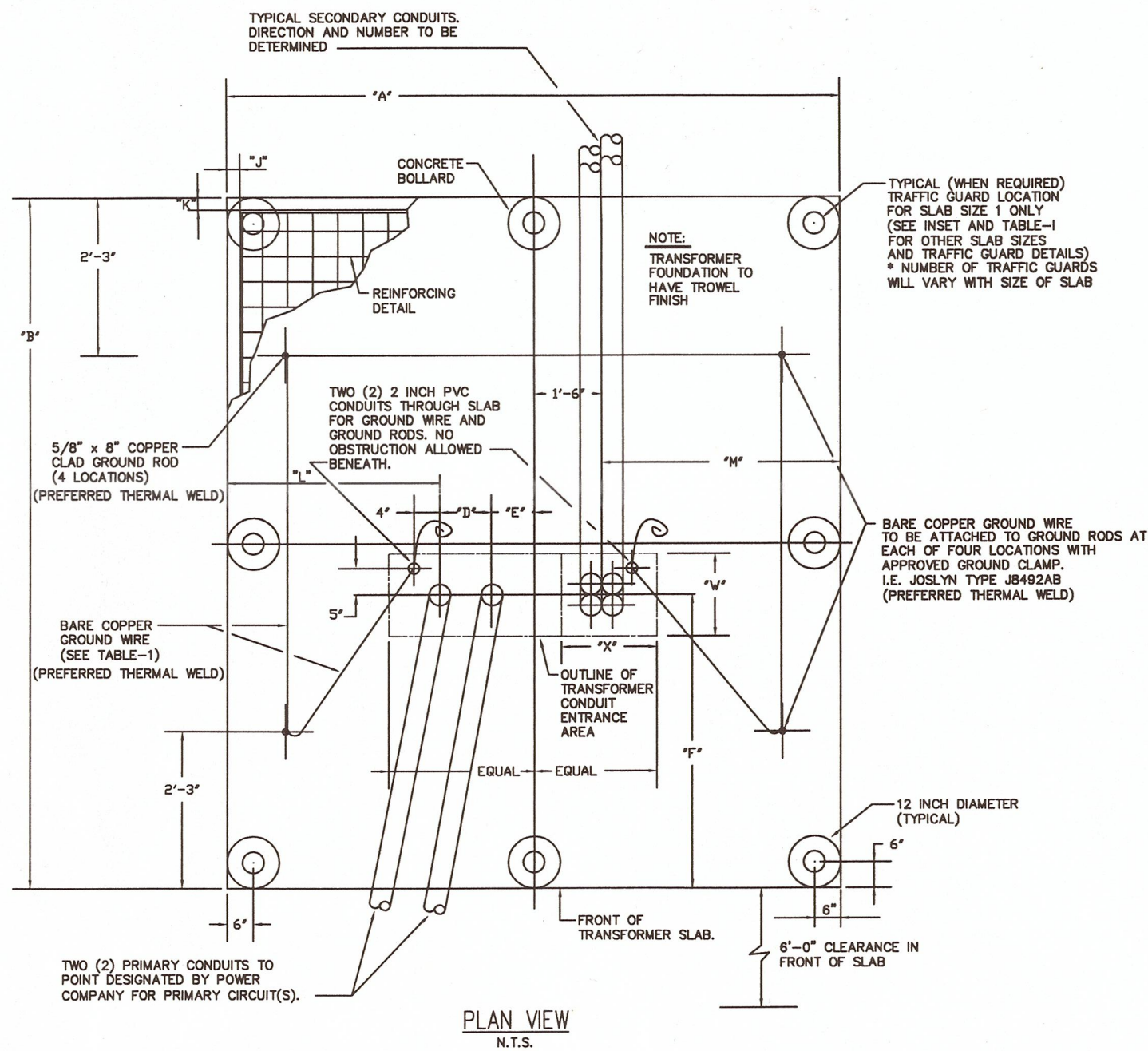


TABLE - I

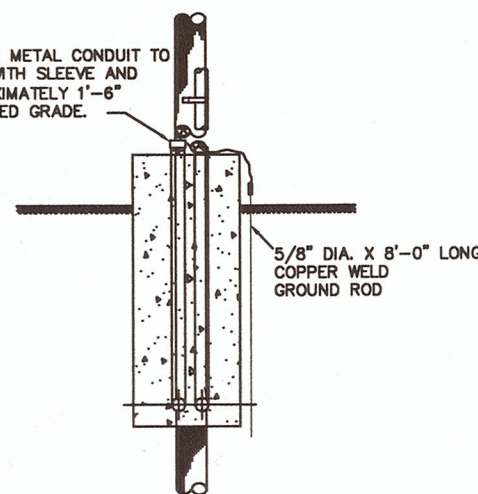
SLAB SIZE	KVA	"A"	"B"	"C"	* TYPE I				* TYPE II				TRAFFIC GUARDS	COPPER GROUND WIRE SIZE ALL VOLTAGES	REBAR DIA.	REBAR SPACING	"J"	"K"	WEIGHT (1000lb.)	TRANSFORMER	SLAB TOTAL	* TYPE I				* TYPE II			
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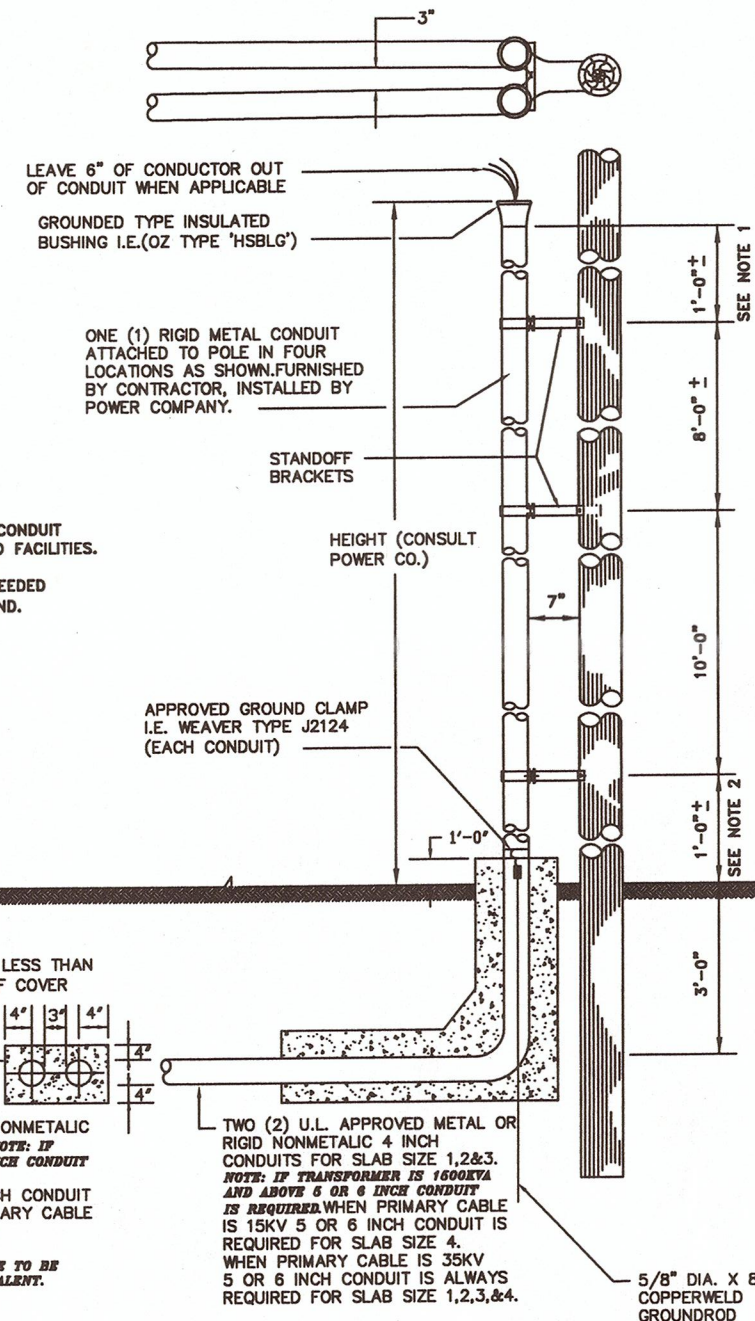
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2000, 2500 & 3750KVA	18"	30 1/2"

\* TYPE I -- IS A RADIAL PRIMARY FEED TYPE TRANSFORMER  
\* TYPE II -- IS A LOOP PRIMARY FEED TYPE TRANSFORMER

ONE (1) RIGID METAL CONDUIT TO BE CAPPED WITH SLEEVE AND PLUG APPROXIMATELY 1'-6" ABOVE FINISHED GRADE.



TERMINAL POLE  
FRONT VIEW



TERMINAL POLE  
SIDE VIEW

### REQUIREMENTS FOR THREE PHASE TRANSFORMER SLAB

- THE CONTRACTOR MUST COORDINATE THE TRANSFORMER SELECTION SLAB SIZE, CONDUIT SIZE AND NUMBER, AND CONDUCTOR SIZE WITH POWER COMPANY.
- AT LEAST TWO DAYS NOTICE SHALL BE PROVIDED TO POWER CO. PRIOR TO POURING OF CONCRETE TO ALLOW INSPECTION OF INSTALLATION BY POWER CO. REPRESENTATIVE.
- CLEARANCES**
  - A MINIMUM OF 6 FT CLEARANCE SHALL BE PROVIDED AT THE FRONT OF THE TRANSFORMER SLAB.
  - CLEARANCES BETWEEN OIL FILLED EQUIPMENT AND BUILDINGS, STRUCTURES, ETC., MUST FOLLOW ALL APPLICABLE CODES. COORDINATE WITH POWER COMPANY.
  - WHEN METERING IS TO BE INSTALLED AT THE TRANSFORMER, A MINIMUM CLEARANCE OF 30 INCHES FROM THE SLAB SHALL BE PROVIDED ON THE SECONDARY SIDE.
  - CLEARANCE FROM CONDUITS TO OTHER UTILITIES, I.E. GAS, WATER, SEWER, ETC., MUST FOLLOW ALL APPLICABLE CODES.
- FENCES**

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  - NO EXTRA CABLE (SEE NATIONAL ELECTRIC CODE 310-4, PARALLEL CONDUCTORS) WILL BE ALLOWED IN SECONDARY COMPARTMENT.
- TERMINATION'S**

SEE POWER CO. ELECTRIC STANDARDS 8.12 FOR ADDITIONAL INFORMATION.

  - INSTALL NEMA STANDARD TERMINALS ON ALL CONDUCTORS.
- CONCRETE**

A. CONCRETE FOR SLAB TO BE 3000 PSI COMPRESSIVE STRENGTH.

### 9. SLAB FOUNDATION SUPPORT

- SEE POWER CO. ELECTRIC STANDARDS 8.10 FOR ADDITIONAL INFORMATION.
- THE FOUNDATION DESIGN MUST HAVE THE SIGNED APPROVAL OF THE POWER CO. REPRESENTATIVE.
  - ONE COPY OF THE PLAN FOR THE TRANSFORMER SLAB INSTALLATION AND FOUNDATION DESIGN MUST BE FILED WITH POWER CO. / ENGINEER OR REPRESENTATIVE PRIOR TO CONSTRUCTION OF SLAB.

### 10. TRAFFIC GUARDS (BOLLARDS)

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### GENERAL REQUIREMENTS FOR THREE PHASE TRANSFORMER SLAB

- CONTRACTOR TO INSTALL SLAB COMPLETE WITH ALL PRIMARY & SECONDARY CONDUIT RUNS, PRIMARY CONDUITS ON POWER CO. POLE, SECONDARY CONDUCTORS, SECONDARY TERMINALS ON SECONDARY CONDUCTORS & PULL STRING IN PRIMARY CONDUIT UNLESS OTHERWISE SPECIFIED. CUSTOMER TO OWN ABOVE PARTS UNLESS OTHERWISE SPECIFIED.
- POWER CO. TO CONNECT SECONDARY TERMINALS TO TRANSFORMER UNLESS OTHERWISE SPECIFIED.
- POINT OF SERVICE TO BE WHERE SECONDARY CONDUCTORS TERMINATE ON TRANSFORMER SECONDARY TERMINALS UNLESS OTHERWISE SPECIFIED.
- POWER CO. TO INSTALL PAD MOUNT TRANSFORMER, ONE 3-PHASE UNDERGROUND PRIMARY CIRCUIT WITH NEUTRAL, PRIMARY POTHEADS ON POLE & METERING UNLESS OTHERWISE SPECIFIED.



### STANDARD 13.8KV AND 23.9KV THREE PHASE PAD MOUNTED TRANSFORMER SLAB

ENTERGY  
P.O. BOX 38803  
WEST MONROE, LA. 71294-8803

SCALE: NONE	DATE: 06/28/2001
DRAWN BY: RHB	CHECKED BY:
TRACED BY: CKJ	APPROVED BY:





**DEPARTMENT OF THE ARMY**  
**OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY**  
**INSTALLATIONS AND ENVIRONMENT**  
110 ARMY PENTAGON  
WASHINGTON, DC 20310-0110

JUL 8 2010

MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Sustainable Design and Development Policy Update (Environmental and Energy Performance)

1. References.

a. Memorandum, Office of the Under Secretary of Defense, DoD Implementation of Storm Water Requirements under Section 438 of the Energy Independence and Security Act (EISA), 19 Jan 10.

b. EPA 841-B-09-001, Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act, Dec 09.

c. Executive Order 13514, Leadership in Environmental, Energy, and Economic Performance, 05 Oct 09

d. AR 420-1, Army Facilities Management, 28 Mar 09.

e. Memorandum, DASA (I&H), 27 Apr 07, subject: Sustainable Design and Development Policy Update – Life-Cycle Costs.

f. Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, 26 Jan 07.

g. Energy Independence and Security Act (EISA) of 2007, 4 Jan 07

h. Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings, Memorandum of Understanding (MOU), 06 Mar 06

i. DoDI 4170.11, Installation Energy Management, 22 Nov 05.

j. Energy Policy Act of 2005 (EPA 05), 08 Aug 05

2. Purpose. The purpose of this memorandum is to update the sustainable design and development (SDD) policy for Army Facilities.

### 3. Applicability.

a. This policy applies to all construction activities in the United States and its territories on permanent Active Army installations, Army Reserve and Army National Guard Centers, and Armed Forces Reserve Centers, regardless of funds source.

b. For purposes of this policy a facility is defined as per the Energy Independence and Security Act of 2007 to be any building, installation, structure, or other property (including any applicable fixtures) owned, operated by, or leased to DoD.

### 4. Policy.

a. Objectives. EAct05, EISA07, EO 13423, and EO 13514 are changing the way we approach efficient design of Army facilities. The Army will apply these statutes and orders by incorporating the high performance building requirements of EO 13514, while considering the environmental, economic, and community factors that influence Army activities. Planning and engineering studies in accordance with AR 420-1 shall incorporate SDD principles to maximize water consumption reduction and optimize energy efficiencies and performance. Opportunity to include renewable energy shall be investigated and documented for each project, starting with installation master planning and project planning and development activities. New buildings, structures, and major renovations shall be planned, programmed, budgeted, designed and built to conform to the five guiding principles in the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (available at <http://www.fedcenter.gov>), and achieve a minimum Silver level through the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) green building rating system (or equivalent overseas third-party green building rating system). To accomplish these objectives the following measures will be incorporated starting with FY13 military construction program and FY13 Sustainment, Restoration, and Modernization (SRM) program where life cycle cost effective:

(1) Energy Efficiency. All new construction projects will be planned, programmed, budgeted, and designed to achieve energy consumption levels a minimum of 40 percent below the consumption of a baseline building meeting requirements of ANSI/ASHRAE/IESNA 90.1-2007, except for low-rise residential buildings, and to reduce the energy cost budget by 20 percent below the pre-renovation baseline for major renovations. These energy efficiency standards are minimums and should be exceeded when feasible based upon best available current technologies.

(2) Metering. This policy requires the installation of advanced utility meters on all MILCON projects, and renovation and energy projects with programmed project costs of \$200,000 or more, to include electrical, natural gas, water, or steam components, or other Army facilities where it has been determined that metering will be both cost effective and practical as a management tool to identify energy cost savings. Advanced utility meters will be connected into an enterprise-wide energy management

control system for the purpose of providing the appropriate information on energy consumption at various levels of aggregation, including individual buildings and installations. This will allow the Army to more effectively monitor, manage and maintain energy systems at their optimal performance levels, collect renewable energy generation and performance data, and compare performance across facilities and installations.

(3) Solar Hot Water Heating. All new construction projects with an average daily domestic hot water requirement of 50 gallons or more, and located in an area shown on the NREL solar radiation maps (<http://www.nrel.gov/gis/solar.html>) as receiving an annual average of 4kWh/m<sup>2</sup>/day or more will be designed to provide a minimum of 30 percent of the facility's hot water demand by solar water heating. Otherwise, harvesting waste heat, integrated co-generation systems, or a combination thereof may be used in lieu of solar water heating where they achieve equivalent energy savings.

(4) Storm Water Management. Incorporate low impact development (LID) criteria as a means to manage storm water on all projects. The LID features must be designed in accordance with EPA 841-B-09-001 (ref. 1.b). All master planning, project development and project site planning will maximize use of the existing topography including slope, hydrology, flora and soils, and minimize site clearing and soil grubbing activities to the greatest extent possible.

(5) Indoor Water Consumption. Employ strategies that in aggregate use a minimum of 20 percent less potable water than the indoor water use baseline calculated for the building, after meeting the Energy Policy Act of 1992 fixture performance requirements. Project development and budgeting along with design and fixture selection should focus on enhancing reduction using most current, available technologies that maximize reduction.

(6) Outdoor Water Consumption. Use water efficient landscape and irrigation strategies, including xeriscaping, rainwater retention, water reuse, and recycling, to reduce outdoor potable water consumption by a minimum of 50 percent over that consumed by conventional means (plant species and plant densities).

(7) Measurement and Verification. Employ total building commissioning practices, tailored to the size and complexity of the building and its system components in order to ensure that design requirements / specifications are met during construction, and to verify performance of building components and systems after beneficial occupancy. Enhanced commissioning process activities must be planned, budgeted, and specified to be completed for the building envelope, storm water management systems, water treatment systems, and information technology systems.

**b. LEED**

(1) New Construction. All vertical construction projects, except Family Housing, starting with the FY13 military construction program will incorporate sustainable design principles into sitting, design and construction, and will be certified at the LEED-NC/MR SILVER level or higher from the Green Building Certification Institute (GBCI). Horizontal construction (e.g., ranges, roads, and airfields) will incorporate the maximum LEED or equivalent sustainable design features available at the site.

(2) Family Housing. All Army Family Housing new construction residential housing starting with FY13 military construction program will be certified at the LEED for Homes SILVER level or higher from the GBCI and Energy Star Qualified New Homes, except where GBCI does not certify in foreign locations, and will be designed to achieve energy consumption levels 45% below the baseline set by IECC 2009.

(3) Existing Buildings. Beginning in FY13 all major renovations will achieve GBCI certification at the LEED-NC/MR Silver level or higher. For purposes of this policy major renovations are defined as changes to a building that provide significant opportunities for substantial improvement in the sustainable design elements of the building, including energy efficiency, or any renovation that exceeds \$7.5 million (requiring congressional notification). For all other building renovation projects this policy only applies to the portions of the building or building system that are being renovated. All new work shall comply with the requirements for new construction referenced above.

c. Life-Cycle Cost Analysis (LCCA). Each project justification shall determine life-cycle cost-effectiveness by using the procedures set out in subpart A of 10 CFR part 436. The project developer or construction agent may choose to use any of four methods to develop the project's scope and budget, including lower life-cycle costs, positive net savings, savings-to-investment ratio that is estimated to be greater than one, and an adjusted internal rate of return that is estimated to be greater than the discount rate as listed in OMB Circular number A-94 "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs."

d. Contracting. All projects using the design/build procurement method will include the LEED assessment in the Request for Proposal (RFP) requirements, achieve the appropriate sustainable rating level and certification requirement in the project, and achieve energy consumption that is at least 40% below the consumption of a baseline building meeting requirements of ASHRAE 90.1-2007. Selection boards will give special consideration to a proposal's ability to comply with this policy when making a selection based on best value. For design-bid-build (D-B-B) contracts, all buildings are to achieve an energy consumption that is at least 40% below the consumption of a baseline building meeting the requirements of ASHRAE 90.1-2007. The designer may design a building to achieve greater than 40% reduction if this can be accomplished within the authorized program amount.

e. Programming. The DD Form 1391 scope and associated costs shall include the full estimated costs associated with achieving this policy. If the cost of SDD, EPOA05, EISA07, EO13423 and EO13514 compliance for a particular project is undetermined, it will be programmed at 2 percent of primary facility cost (as before) until it is determined. Any funds programmed specifically for compliance with these statutes as a DD Form 1391 line item shall not be used for purposes other than sustainability/energy efficiency.

f. Waivers. All projects will incorporate low impact development (LID), sustainability and energy efficiency principles and technologies into planning, programming, budgeting, design and construction using an integrated and holistic approach. Waivers to the requirements of this policy will not be considered.

g. The Army's commitment to sustainable design and development extends beyond construction or renovation. Building performance monitoring and analysis will be conducted throughout the life-cycle of the facility to ensure that performance problems are identified and corrected in a timely manner. Operation and maintenance procedures, to include janitorial services, will be adjusted as necessary to meet the DoD and Army sustainability standards specified in this memo.

h. Conclusion. High-Performance buildings are critical to cost effective life cycle management of our infrastructure and national energy security. The Army must continue to develop and implement sustainability objectives for our facilities, installations, and infrastructure to meet energy security and independence goals. I appreciate your support in the implementation of this policy.



Joseph F. Calcara  
Deputy Assistant Secretary of the Army  
(Installations and Housing)

**DISTRIBUTION:**

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CF:

DEPUTY ASSISTANT SECRETARY OF THE ARMY (ESOH)  
DEPUTY ASSISTANT SECRETARY OF THE ARMY (E&P)  
DEPUTY ASSISTANT SECRETARY OF THE ARMY (SI)

## APPENDIX OO

### AIRVAC 911 ENGINE EXHAUST REMOVAL SYSTEM



air vacuum corporation

*The World Leader* \_\_\_\_\_  
\_\_\_\_\_ in Engine Exhaust Removal Systems



**AIRVAC 911™ Engine Exhaust Removal System**  
*for the Fire and EMS Industry*

**AIRVAC**  
**911**  
Engine Exhaust Removal System

Air Vacuum Corporation  
P.O. Box 517  
Dover N.H. 03821-0517  
Toll Free : 800-540-7264



# The World's Leading Hands-Free, Hoseless System



Every day, your fire and EMS personnel work hard to save lives. But who is there to protect *them* from the hazards of harmful fire engine and ambulance diesel exhaust?

**We are.**

We are the world leader in engine exhaust removal for the fire and EMS industries. The AIRVAC 911™ Engine Exhaust Removal System was designed specifically as a self-contained, affordable, attachment-free, fully automatic system for removing hazardous gases and particulate from fire station and EMS station work environments.

## The System Of Choice for Fire and EMS Departments Worldwide

Fire departments and EMS facilities know that exposure to high levels of diesel particulate and gases can cause symptoms of headache, dizziness and nausea, and are associated with an increased risk of lung cancer. For EMS facilities, diesel particulate can also contaminate medical equipment and potentially affect patients. Both industries need a system that is effective, safe, cost-efficient, NFPA 1500 and OSHA compliant, and non-disruptive to daily operations. That's why they prefer the most technologically advanced system on the market today... the AIRVAC 911™ Engine Exhaust Removal System.

## AIRVAC 911™ Engine Exhaust Removal System Features and Benefits

The AIRVAC 911™ Engine Exhaust Removal System is the most effective and efficient exhaust system available. It automatically removes the particulate and gases that are released within your building every time vehicles start up and return. Automatically activated and shut down by a UL certified "Smart Timer" control panel, it works independently of your vehicle, so there is no need for cumbersome hoses or vehicle hookups.

### Benefits for Fire Departments:

- ➔ Removes gases, carcinogens and particulate
- ➔ No hoses, canisters, hook-ups or vehicle connections
- ➔ 100% self-contained maintenance-free operation — no personnel intervention needed
- ➔ Fully-automatic "Smart Panel" activation and shutdown
- ➔ Highly affordable
- ➔ Energy-efficient, compact and quiet
- ➔ Easy to install
- ➔ No changes or disruption to daily operations—non-structural
- ➔ Non-obstructive ceiling units
- ➔ No exhaust or polluted air released to outdoor environment
- ➔ Energy efficient—no heating or cooling loss
- ➔ Meets NFPA 1500, OSHA, IBOCA, EPA, GSA standards
- ➔ Best warranty in the industry
- ➔ Only product on the market to remove engine "backwash"
- ➔ No maintenance except periodic filter changes
- ➔ Reduces emergency response time—nothing to disconnect or unhook
- ➔ Made in the U.S.A.

### Benefits for EMS Facilities:

- The same benefits as fire departments, plus
- ➔ Maintains internal temperature to protect temperature-sensitive medical equipment
  - ➔ Provides clean, safe environment for workers and patients
  - ➔ Eliminates particulate residue or contaminants on medical equipment
  - ➔ Able to get into low-ceiling areas more than any other system on the market
  - ➔ Reduces emergency response time—nothing to disconnect or unhook.



## Our System—What Sets It Apart

The AIRVAC 911™ Engine Exhaust Removal System has many distinct advantages that make it the most unique and effective system on the market.

### Manufacturer Direct

The AIRVAC 911™ Engine Exhaust Removal System is made in the U.S.A. It is the industry's original hoseless system manufactured and distributed directly by Air Vacuum Corporation. This means you not only cut the cost of the "middleman," you deal directly with the people who know the equipment inside and out.

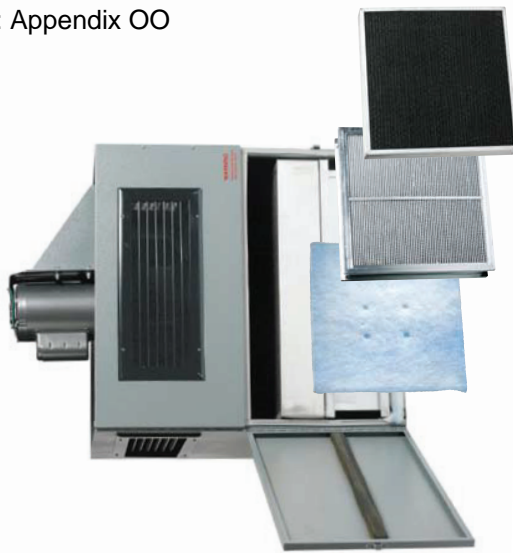
### Vertical Airflow Design

The AIRVAC 911™ Engine Exhaust Removal System is the only hoseless system to have a Vertical Airflow Design to maximize particulate matter removal. The industry's most effective airflow design,

"the Coanda Airflow Design Principle" allows for 360 degree air movement throughout the area, continuously filtering the air and eliminating dead spots of exhaust. In head-to-head comparisons with horizontal systems, the system's Vertical Air Flow cleans air in a more uniform and natural pattern, at a higher efficiency than horizontal systems.

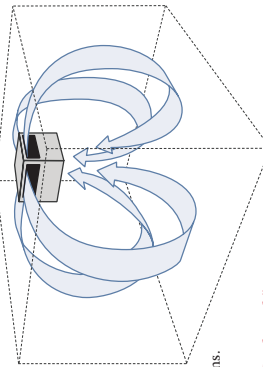
### Only System to Eliminate "Exhaust Backwash"

The AIRVAC 911™ Engine Exhaust Removal System is the only system on the market to eliminate the problem of "exhaust backwash"—the exhaust fumes that re-enter the building as vehicles leave and return from their calls.



### Four-Stage Filter Pack

The AIRVAC 911™ Engine Exhaust Removal System comes with four fully adjustable air return vents for maximum airflow. Filters include a three ply polyester pre-filter, a high efficiency particulate air filter (HEPA MAX 3000) UL rated at 95% to 99.97% efficiency, and a two stage carbon gas phase extractor (MULTISORB 3000) for both high weight molecular gases (benzene, octane, methanol and more) and a gas phase extractor to treat light weight gases (sulphur dioxide, nitrogen dioxide and formaldehyde).



### Best Warranty in the Industry

The AIRVAC 911™ Engine Exhaust Removal System comes with a five year warranty on all unit components excluding consumable filters, the strongest in the industry.

**For a free evaluation or proposal**, call 800-540-7264, go to [www.airvac911.com](http://www.airvac911.com), email us at [sales@airvacumcorporation.com](mailto:sales@airvacumcorporation.com)







## Testimonials

*"One of the biggest benefits is that the AIRVAC 911™ Engine Exhaust Removal system addresses the blast of exhaust received when the apparatus leaves the apron, or 'backwash.' Hose systems disconnect as the unit leaves the bay and do not capture the 'second' dump of fumes. Our white walls are clear, which tells me my folks are working in a safer environment."*

–Fire Chief,  
Ripon Fire District  
Ripon, CA

*"The system is user-friendly, works without any manpower, and is always ready."*

–Fire Chief  
Beachwood Volunteer Fire Company No 1  
Beachwood, NJ

*"As an ambulance service, we value having clean equipment and vehicles for our patients as well. The air in our vehicle bay actually feels better and smells better!"*

–Administrator  
White River Valley Ambulance, Inc.  
Bethel, VT



Air Vacuum Corporation  
PO Box 517  
Dover, New Hampshire 03821

[www.airvac911.com](http://www.airvac911.com)

TOLL FREE: 800-540-7264

FAX: 603-743-3111

EMAIL: [sales@airvacuumcorporation.com](mailto:sales@airvacuumcorporation.com)



Friday, September 07, 2012

## APPENDIX PP

### DEMOLITION AND PROPOSED SITE RECORD OF ENVIRONMENTAL CONSIDERATION (REC'S)

BUILDING NO. 1736

BUILDING NO. 1738

BUILDING NO. 1739

BUILDING NO. 1741

PROPOSED SITE

TCLP CALCULATIONS

## BUILDING NO. 1736

AFZX-PW-PS (420-10c)

June 8, 2011

MEMORANDUM FOR DPW, ENRMD

**SUBJECT: Disposal of Building 1736, Fort Polk, LA (PN# 17220).**

1. Request site-specific environmental evaluations for National Environmental Policy Act (NEPA) compliance, Clean Air Act Compliance (Title V) evaluation, asbestos, lead, etc., as applicable for the subject project.
2. Record of Environmental Consideration (REC) is enclosed for your review and concurrence. If your office concurs to the document enclosed, request a copy of the REC with concurrence be returned to this office as soon as possible. The project will be held pending your response.
3. Point of contact is Dennis Jackson, DPW Planning Division, 531-2092

Encl



Scotty Goins  
Chief, Planning Division

**\*\*\* Note:** REFER TO Attached (Report of Findings) which discloses presence or absence of Hazardous Materials. If present, Hazardous Material(s) must be removed prior to renovation.

EPSP/TSD Program Manager MUST Comply with attached Health and Safety Memorandums.

Friday, September 07, 2012

CY11147 ENRMD Control Number



**DEPARTMENT OF THE ARMY  
JOINT READINESS TRAINING CENTER AND FORT POLK  
FORT POLK, LOUISIANA 71459**

**RECORD OF ENVIRONMENTAL CONSIDERATION**

**To: Environmental Office**

**From: DPW Planning Division**

1. **Project Title:** Disposal of Building 1736 (PN# 17224).
2. **Brief Description of Proposed Action:** The Disposal of Building 1736, hauling of debris from sites to an approved landfill and restore site to satisfactory condition.
3. **Project Engineer/ Manager Determination:**

Environmental Parameters	YES	NO
1. Action will require DHH approval of water system changes.		X
2. Action will require DHH approval of wastewater changes.		X
3. Project footprint between 1 and 5 acres (storm water permit).	X	
4. Project footprint greater than 5 acres (storm water permit).		X
5. Action has the potential to disturb asbestos.	X	
6. Action has the potential to disturb lead based paint.	X	
7. Action is new construction (independent of existing structure).		X
8. If number 7 above was yes, were alternatives considered for the new construction.		
9. If number 8 above was yes was the Building Constraints map utilized for development of alternatives.		
10. If number 9 above was yes are the maps for three alternatives included in this Record of Environmental Consideration.		

4. **Purpose and Need:** This Facility will be replace under New Project Construction.
5. **Anticipated Date and/or duration of Proposed Action:** July 2013
6. **A Map is attached:** (Size 8.5" x 11" no greater than 8.5" x 14").
7. **Reason for using record of environmental consideration:** Action is categorically excluded under the provisions of categorical exclusion (CX) C-2 32 CFR 651, Appendix B [and no extraordinary circumstances exist and there are no adverse affects to sensitive resources, as defined in CFR 651.29(b), 651.29(c)] because: (1) See paragraph 8 below (Effects on the Environment), showing that there are no significant environmental impacts; and (2) this proposed action satisfies the screening conditions in 32 CFR 651.29(a), and meets all screening criteria in 32 CFR 651, Appendix B, Section I.
8. **Effects on the Environment:** The proposed action was evaluated by the proponent and an ENRMD Environmental Subject Matter Expert / Evaluator using the following parameters.

Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
Air Quality				Enclosure 3
Indoor Air Quality				Enclosure 4
Storm Water				Enclosure 5
Drinking/Waste Water Systems				Enclosure 5
Cultural Resources				BY

EPSP/TSD Program Manager MUST Comply with attached Health and Safety Memorandums.

CY11147 ENRMD Control Number



Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
Does the property qualify as historical property under the National Historic Preservation Act (NHPA)? <input checked="" type="checkbox"/> no yes (sign name) <u>Blair Yaffee</u> <u>Enclosure 2</u>				
Timber				
Threatened/Endangered Species and Species of Concern				
MBTA				
Sensitive Plants or Bogs				
Wetlands				
Soils/Erosion Control				
Other Natural Resources				
Pest Management				
Noise				
Asbestos				<u>Enclosure 6</u>
Lead-based Paint				<u>Enclosure 7</u>
Solid/ Hazardous Waste				<u>Enclosure 8</u>
Environmental Justice				
Protection of Children				
Environmental Restoration/SWMU				<u>Enclosure 9</u>

CY11147 ENRMD Control Number

## 9. Coordination with other agencies and installation departments:


Installation Organization or Other Agency	Coordination Date	Coordinating Person
Coordination with ESPD/ Master Planning	03 June 2011	Scotty Goins
Coordination with ESPD/ Project Manager	03 June 2011	Shane Gremillion
<u>OK</u>	<u>24 June 2011</u>	<u>Steve Gibson (Enclosure 1)</u>

## 10. NEPA Specialist survey report is attached as Appendix A.

11. **Conclusion:** This proposed action has been evaluated in accordance with 32 CFR Part 651. It has been determined that this proposed action does not individually or cumulatively have significant effects on the human or natural environment. There will be no environmentally controversial changes to existing environmental conditions. There are no circumstances which would require an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). This proposed action: (1) satisfies all screening conditions in 32 CFR 651.29(a); (2) meets all screening criteria in 32 CFR 651, Appendix B, Section I; (3) does not involve any extraordinary circumstances, as defined in 32 CFR 651.29(b), that would preclude the use of a CX; (4) will not adversely affect environmentally sensitive resources as defined in 32 CFR 651.29(c); (5) qualifies for categorical exclusion (CX) number(s) C-2 in accordance with 32 CFR 651, Appendix B, Section II.

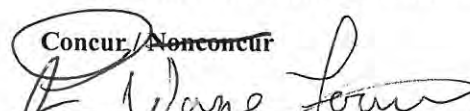
12. **Other Environmental Laws:** This document does not relieve the proponent of applicable federal and state laws and regulations.

## Project Proponent

  
Name Dennis Jackson  
Title Reality Specialist

Date: June 03 2011

## Installation Environmental Coordinator

  
Concur/Nonconcur  
Charles H. Stagg  
Chief, Environmental and Natural

Resources Management Division  
Directorate of Public Works

Date: 13 Oct 2011

**\*Note. REFER TO Attached (Report of Findings) which discloses presence or absence of Hazardous Materials. If present, Hazardous Material(s) must be removed prior to renovation.**

EPSPD/TSD Program Manager MUST Comply with attached Health and Safety Memorandums.

**DEPARTMENT OF THE ARMY**  
**JOINT READINESS TRAINING CENTER AND FORT POLK**  
 FORT POLK LOUISIANA 71459  
**ENVIRONMENTAL ANALYSIS/FIELD SURVEY REPORT**  
**Demolition/Disposal of Building 1736**  
**Associated with PN 17220**  
**CY11147**

CY11147 ENRMD Control Number

On June 13, 2011 a field survey was conducted by a NEPA staff member. An inspection of the site location was conducted as a baseline survey to evaluate potential impacts of the proposed action. The proposed actions are to demolish building, haul debris to an authorized landfill, and restore site with compatible material.

The proposed action is covered under categorical exclusion (CX) number C-2, 32 Code of Federal Regulations (CFR) 651 and by the following Environmental Assessment: "*Programmatic EA for Demolition of WWII and Family Housing Buildings at Fort Polk, Louisiana*; January 2001". CX, C-2 states, "Demolition of non-historic buildings, structures, or other improvements and disposal of debris therefrom, or removal of a part thereof for disposal, in accordance with applicable regulations, including those regulations applying to removal of asbestos, polychlorinated biphenyls (PCBs), lead-based paint, and other special hazard items (REC required)". This action meets the criteria for a categorical exclusion in accordance with (CX) number C-2 of 32 CFR Part 651.29, Appendix B, Section I and the proposed action poses no significant impact to the environment or human health. In order for a categorical exclusion to be used as stated in 32 CFR 651, a set of screening criteria must be met. Those screening criteria are listed below.

A CX may be used only when each of the following screening criteria is true:

- The action has NOT been segmented. **TRUE**
- The action does NOT have a reasonable likelihood of causing significant effects on public health, safety or the environment. **TRUE**
- This action does NOT cause an imposition of uncertain or unique environmental risks. **TRUE**
- This action is NOT of greater scope or size than is normal for this category of action. **TRUE**
- This action is NOT expected to produce reportable releases of hazardous or toxic substances as specified in 40 CFR part 302, Designation, Reportable Quantities, and Notification. **TRUE**
- This action is NOT expected to produce releases of petroleum, oils, and lubricants (POL) except from a properly functioning engine or vehicle, application of pesticides and herbicides, where the proposed action results in requirement to develop or amend a Spill Prevention, Control, or Counter Measure Plan. **TRUE**
- There is NO reasonable likelihood of this action violating any federal, state, or local law or requirements imposed for the protection of the environment. **TRUE**
- This action does NOT involve effects on the environment that are highly uncertain, involve unique or unknown risks, or are scientifically controversial. **TRUE**
- This action does NOT establish a precedent for future actions that are reasonably likely to have a future significant effect. **TRUE**
- This action is not expected to potentially degrade an already existing poor environment or effect areas not already significantly modified from their natural condition. **TRUE**
- This action is NOT expected to produce unresolved effects on (1) Proposed federally listed, threatened, or

endangered species or their designated critical habitats, (2) Properties listed or eligible for listing on the Natural Register of Historic Places, (3) Areas having special designation or recognition such as prime or unique agriculture lands; coastal zones; designated wilderness or wilderness study areas; wild and scenic rivers; National Historic Landmarks; 100-year flood plains; wetlands; sole source aquifers; National Wildlife Refuges; national Parks; areas of critical environmental concern; or other areas of high environmental sensitivity, or (4) Cultural Resources as defined in AR 200-4.

TRUE

- This is NOT a new Environmental Management System (EMS) Facility – Activity-Task TRUE
- This action does not require new EMS Operational Control (required) TRUE
- This action does not require new EMS competency training TRUE

### Conclusion of Findings

The following actions are covered under the EA, “*Programmatic EA for Demolition of WWII and Family Housing Buildings at Fort Polk, Louisiana*; January 2001”. All buildings are to be disposed in conjunction with Family Reduction Plan. All applicable Installation (dig permit, physical security, safety requirements .....), Federal, and State laws and regulations should be followed. **Please Note: Facility may qualify for the Qualified Recycling Program (QRP), see Enclosure 1. See Enclosure 2 for information regarding Historic Preservation. For specific natural resources of concern such as Air Quality, no significant air quality impacts are expected provided reasonable precautions are taken to prevent dust emissions during demolition or subsequent transport off the Installation. Furthermore, any comfort cooling system that may be associated with the structure must have the refrigerate i.e., Freon, removed per the requirements of 40 CFR Part 82 before disposal (Enclosure 3); Indoor Air Quality, presents no impact to indoor air quality (Enclosure 4); Storm Water, care must be taken to prevent disturbed sediment and other debris from entering the storm drains/storm water conveyance or surface water bodies (Enclosure 5); Drinking Water (Enclosure 5); Asbestos which was Detected (Enclosure 6); Lead which was Detected (Enclosure 7); Hazardous/Solid Waste (Enclosure 8); and SWMU (Enclosure 9) a member of the Compliance Branch conducted an evaluation. This report will be attached to the REC as part of the NEPA documentation. If there are no changes in this scope of work or location of the proposed action, no other environmental analysis is planned.** In conclusion the nature of this action poses no significant environmental impacts to the environment. The proposed action meets the screening criteria for the completion of a Record of Environmental Consideration under categorical exclusion C-2 of the 32 CFR 651.

CY11147 ENRMD Control Number



CY11147 ENRMD Control Number



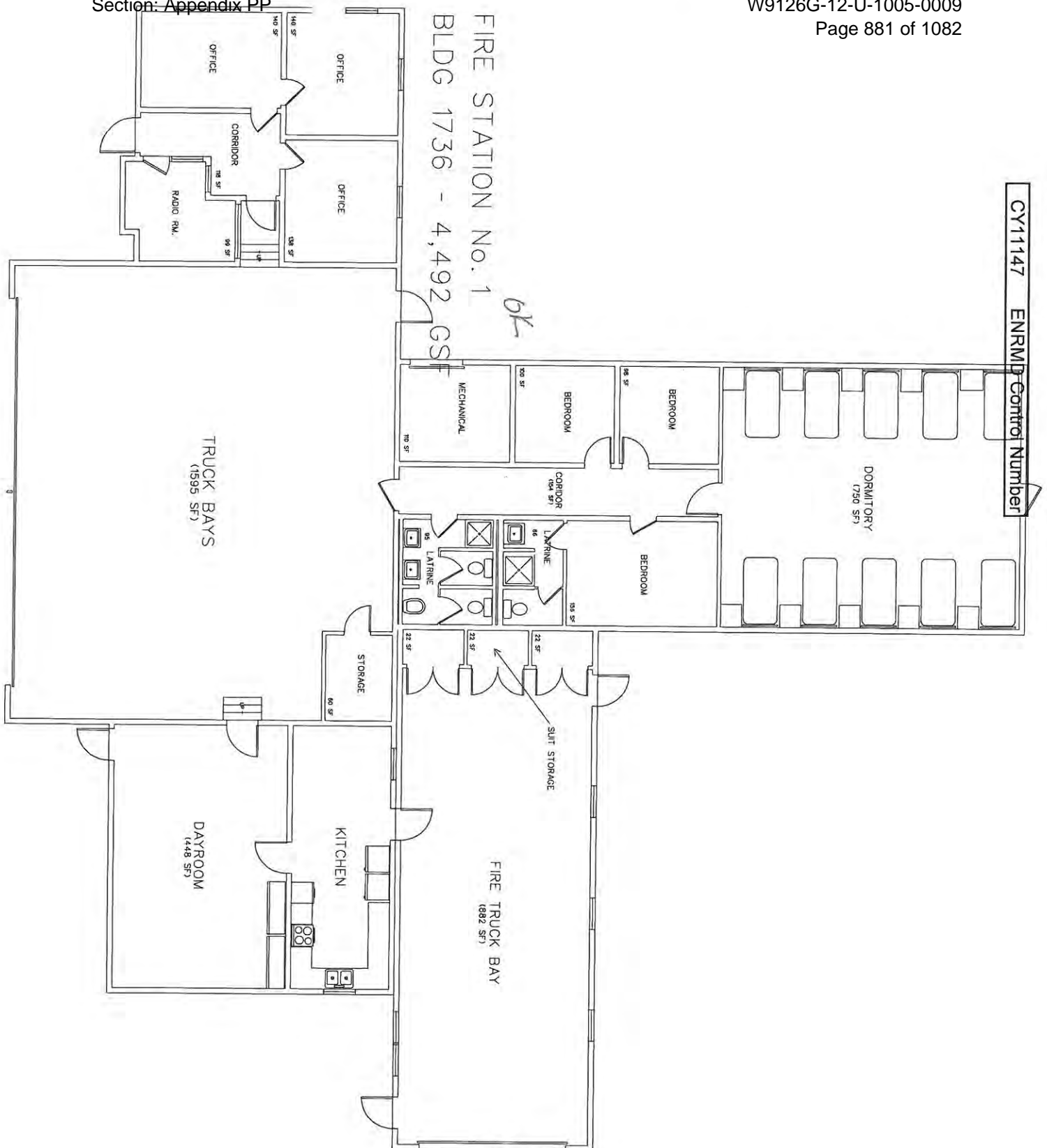


CY11147 ENRMD Control Number

For Additional Information regarding survey, please contact the undersigned below.

A handwritten signature in blue ink, appearing to read "Allison Cedars". The signature is fluid and cursive.

Allison Cedars  
Ecologist/NEPA Section  
DPW, ENRMD, Conservation Branch  
1697 23<sup>rd</sup> Street, Building 2543  
Fort Polk, LA 71459  
337-531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)



**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 1*

**From:** Gibson, Steven S CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 11:01 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

Allison,

I conducted a recon of the facilities and there are recyclables to be salvaged from the demo operation.

We probably need to figure out how to get this in the demo contract, I can provide the roll off for scrap metal.

Steve

CY11147 ENRMD Control Number

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 7:35 AM  
**To:** St. Romain, Phil Mr CIV USA IMCOM; Gibson, Steven S CIV USA IMCOM  
**Subject:** SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

Mr. St. Romain,

Could you please review the following RECs for SWMU Statements?

CY11146 - Installation of 1000 Gallon Diesel Fuel Pod for VANTEX Porta Pot Service for Fort Polk and Rotational Units (W91248-10-D-002).

CY11147-11150 are demolition of Fire Station Facilities (1736, 1737, 1738,1739). Attached is copy of RECs.

Mr. Gibson would the Fire Station Facilities qualify for any QRP opportunities?

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED

Caveats: FOUO



*Enclosure*

Classification: UNCLASSIFIED

Caveats: FOUO

CY11147 ENRMD Control Number



Section: Appendix PP

DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
WASHINGTON, DC 20310-0111

November 16, 1993

REPLY TO  
ATTENTION OF

912173737222 P:02  
W9126G-12-U-1005-0009

Page 50 of 102

Enclosure 2



Dr. Robert Bush  
Executive Director  
Advisory Council on Historic Preservation  
The Old Post Office Building, Suite 809  
1100 Pennsylvania Avenue, N.W.  
Washington, D.C. 20004

Dear Dr. Bush:

Under the terms of the June 7, 1986 Programmatic Memorandum of Agreement (PMOA) for the demolition of World War II Temporary Buildings, as amended on May 5, 1991, the Department of Defense (DoD) was required to undertake various actions to address the effects of the Congressionally mandated demolition of WWII temporary buildings. The enclosed documentation represents the result of work accomplished to meet all PMOA (as amended) stipulations for WWII temporary buildings.

The Historic American Building Survey/Historic American Engineering Record (HABS/HAER) documentation effort associated with the PMOA requirement was extensive. Of the 27,000 World War II temporary buildings in the DoD inventory, a total of 113 different building types were identified and documented in consultation with the HABS/HAER.

This extensive DoD effort has fulfilled the Army's obligations under the PMOA, and has fully addressed the effects of the Congressional order to demolish all WWII temporary buildings. Therefore, the Army will continue with the demolition effort without further restriction and in full compliance with the National Historic Preservation Act of 1966, as amended.

Sincerely,

Lewis D. Walker  
Deputy Assistant Secretary of the Army  
(Environment, Safety and Occupational Health)  
OASA (I, L&E)

Enclosure

CY11147 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 3*

**From:** Skinner, Harvey Mr CIV USA IMCOM  
**Sent:** Monday, June 13, 2011 3:00 PM  
**To:** Thames, Sara Ms CIV USA IMCOM  
**Cc:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: REC-CY11147 through CY11150 (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

After a review of the narrative contain in REC CY11147 through CY11150 no adverse air quality impacts are expected from the disposal of the buildings provided reasonable precautions to prevent fugitive dust are employed, during both the demolition and subsequent transport to the landfill.

Harvey Skinner  
Environmental Protection Specialist  
DPW/ENRMD/CMB  
1647 23rd Street BLDG. 2516  
Fort Polk, LA 71459-5509  
Comm: 337-531-6026  
Fax: 337-531-8950  
E-mail: [harvey.skinner@us.army.mil](mailto:harvey.skinner@us.army.mil)

CY11147  
ENRMD Control Number

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 1:54 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Madison, Raywood T CTR US USA; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Broussard, Nathan G Mr CIV USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Mayes, James W Mr CTR US USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** REC-CY11147

All,

The following REC has been submitted for environmental review:

CY11147 - Disposal of Building 1736..

Project evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars. Thx!

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459

Section: Appendix PP

e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)

office: (337) 531-1653

DSN: 863-1653

fax: (337) 531-2627

W9126G-12-U-1005-0009

Page 886 of 1082

Enclosure 3

Classification: UNCLASSIFIED

Caveats: FOUO

03/11/11/14/7 BEN FRWMD (Continued) Number 1

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 4*

**From:** Veillon, Tammy G Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 3:40 PM  
**To:** Thames, Sara Ms CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: REC-CY11147 (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

This REC presents no impact to IAQ.

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 1:54 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Madison, Raywood T CTR US USA; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Broussard, Nathan G Mr CIV USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Mayes, James W Mr CTR US USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** REC-CY11147

All,

The following REC has been submitted for environmental review:

CY11147 - Disposal of Building 1736..

Project evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars. Thx!

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459  
e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)  
office: (337) 531-1653  
DSN: 863-1653  
fax: (337) 531-2627

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11147 ENRMD Control Number



**Water Resources****Storm Water Protection/Permitting**

1. **Best Management Practices (BMPs) for construction activity of any size:** Only storm water should enter the storm water conveyances and inlet systems; the installation has a separate storm sewer system that drains directly to receiving streams.
  - a. **Siphoning water from or dumping into the storm sewers or natural water bodies is prohibited.**
  - b. Employ soil erosion measures such as silt fences and inlet protection to prevent sediment from leaving the site and entering the storm drains
2. **Small construction activities (1 Acre to 4.99999 Acres)** will obtain and follow the guidelines mandated in the Storm Water General Permit (#LAR200000).  
[www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR200000.pdf](http://www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR200000.pdf)
3. **Large Construction Activities (5 Acres and over)** will obtain and follow the guidelines mandated in the Storm Water General Permit (#LAR100000).  
[www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR100000.pdf](http://www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR100000.pdf)

**Potable/Non-potable Water**

1. All **potable water** and **wastewater** taps and tie-ins will require coordination with American Water and may also require DHH approval.
2. **Potable water** will only be collected at either the South Fort Georgia Ave. 2900 block or the North Fort K Avenue point. Collection containers must be labeled "potable water." Contractors must have a backflow prevention device to collect water.
3. Collection of water from an installation **fire hydrant** requires submission of an application to the South Fort Water Plant on Pennsylvania Ave. building 2902.
4. **Non-potable water** can only be collected at the South Fort Water Plant located on Pennsylvania Ave. at building 2902. Contractors must have a backflow prevention device to collect water.
5. Garden hoses are not to be placed in **non-potable** water sources such as radiators, puddles, chemical tanks, cement mixing trucks, pools, etc.
6. The attachment of chemical sprayers to garden hoses is prohibited.
7. New or altered permanent backflow prevention assemblies must be installed in accordance with manufacturer specifications and according to Louisiana Plumbing Codes. Backflow preventers will be tested and certified after installation, modification, or alternation.
8. Report leaking or broken water lines, back siphonage, and backflow prevention/cross-connection issues to the American Water Service Order Desk.
9. All water lines must be removed and/or capped prior to demolition activities; contact American Water for line locates and approval for water/wastewater system modifications.

**Note: For further information concerning taps, tie-ins, back flow prevention installation, and scheduling of fill times, contact American Water @337-531-2036 or 537-1161.**

**Water/Monitoring Wells/Geothermal Heat Pumps**

1. Contractors shall drill, construct, register, and plug wells and boreholes, and meet the well drilling licensing requirements in accordance with the *Water Well Rules, Regulations, and Standards State of Louisiana* issued by the Department of Transportation and Development Office of Public Works 1985, and the *Construction of Geotechnical Boreholes and Groundwater Monitoring Systems Handbook*, prepared by The Louisiana Department Of Environmental Quality and Louisiana Department Of Transportation And Development, December 2000.
2. Contractors shall only use drilling additives approved by DPW-ENRMD.
3. Contractors will provide DPW-ENRMD a copy of the **Well Registration Short Form (DOTD-GW-1S0)**, **drilling plan**, **GPS coordinates**, and **site description for the borehole and/or well**.

4. Contractors shall **notify DPW-ENRMD 24 hours** prior to plugging and abandoning any well and/or borehole, and provide a copy of the **Well Plugging and Abandonment Form (DOTD-GW-2)** upon completion.

**Surface Water Quality (Non-Point Source Run-off)**

Tenants, organizations, contractors, and residents will prevent the discharge or causing the discharge of any pollutant into Fort Polk's surface waters, groundwater, drainage ditches, storm drains, or on the ground.

**Pollutants include, but are not limited to:**

1. Chemicals, detergents, solvents, cleaning agents, POLs, or antifreeze
2. Discharge liquid wastes from field laundries, field showers, field kitchens, sanitary sewers, or water purification systems
3. Pesticides and herbicides where the manufacturer's instructions for application have not been followed
4. Garbage, litter, and universal wastes
5. Erosion and sediments

**For additional information contact:**

**Fred Hartzell**  
**Engineer Technician, ENRMD**  
**337-531-1962/337-529-4942**

CY11147 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 5*

**From:** Baker, Christina L CTR US USA  
**Sent:** Friday, June 10, 2011 2:13 PM  
**To:** Thames, Sara Ms CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: REC-CY11147  
**Attachments:** WATER REC RESPONSE FINAL.docx

Please see the attached water resources comments in response to the narrative provided and the environmental parameters selected for REC CY11147. Please ensure that exposed soils are stabilized and storm water conveyances are protected from sedimentation.

Christina Baker, Contractor  
Innovar Environmental Inc.  
DPW-ENRMD  
1647 23rd Street Building 2516  
Fort Polk, LA 71459-5509  
[Christina.baker2@us.army.mil](mailto:Christina.baker2@us.army.mil)  
COMM: 337.531.2894  
DSN: 863.2894  
FAX: 337.531.8950

CY11147 ENRMD Control Number

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 1:54 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Madison, Raywood T CTR US USA; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Broussard, Nathan G Mr CIV USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Mayes, James W Mr CTR US USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** REC-CY11147

All,

The following REC has been submitted for environmental review:

CY11147 - Disposal of Building 1736..

Project evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars. Thx!

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459  
e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)  
office: (337) 531-1653  
DSN: 863-1653  
fax: (337) 531-2627



*Enclosure 6*

IMSE-POL-PWE

MEMORANDUM FOR ENRMD, CB

SUBJECT: Report of Finding, Asbestos Inspection of Building  
1736, Fort Polk, LA

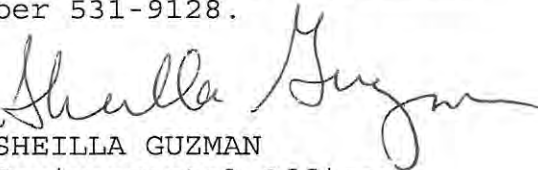
1. A focused inspection was conducted on Building 1736 on 22 July 2011, for the determination of the presence of asbestos containing building materials (ACBM). Please understand that these results pertain only to that portion of the building for which renovation (work) actions are proposed. The results in this Report of Findings are not necessarily applicable to the remaining spaces in the building. The inspection was performed at the written request of the Environmental and Natural Resources Management Division, Conservation Branch (ENRMD, CB). Inspection results are to be used as part of the Record of Environmental Consideration (REC), ENRMD Control Number CY11147.

2. The focused inspection was performed by Mr. James Mayes, (Certified Asbestos Inspector No.7I00766) a representative of the Fort Polk ENRMD, Compliance Management Branch. The samples were submitted to the ENRMD Laboratory for analysis.

**3. ASBESTOS-CONTAINING MATERIAL WAS DETECTED.**

4. Descriptions and locations of asbestos containing homogeneous areas are listed at Enclosure 1. Number (3) above describes whether ACBM was identified in areas impacted by the scope contained in (REC) CY11147. Sampling locations are identified at Enclosure 2.

5. For further technical information about interpretation of contamination levels and compliance with environmental regulations, contact Sheilla Guzman with the Compliance Management Branch at phone number 531-9128.

  
SHEILLA GUZMAN  
Environmental Officer

Encl  
as

CY11147  
ENRMD Control Number

Building Name:  
 Description/Use: FIRE STATION  
 Year Constructed: 1941  
 Square Feet: 4492  
 Floors: 1  
 Full Survey: Yes  
 Certified: No

Are there areas that are inaccessible? No

**Table 1**  
**Asbestos Containing Homogeneous Areas**

HGA	Material Code	Description / Location	Quantity (LF or ft²)*	# of Elbows and Valves	Photo Frame Number	Asbestos	Friable	Material Type	Condition	Damaged Material Exposed and Visible (%)	Cause of Damage	Disturbance Factor	Air Movement	Damage Potential
HGA	AAX	FLOOR TILE WITH MASTIC, 12" GRAY WWHT AND DARK GRAY SPECKS	70 SF		117889	Chrysotile: 2	No	Misc	Good			Not Visible	Low	Low Potential Damage
HGA	EU	12" FLOOR TILE WHITE W/GRAY	50 SF		3926	Chrysotile: 2	No	Misc	Damaged	<25%	Physical	Visible	Low	Low Potential Damage
HGA	GQ	FLOOR TILE GREEN	50 SF		3927	Chrysotile: 2	No	Surface	Good		Physical	Visible	Low	Low Potential Damage
HGA	TA	FLOOR TILE WITH MASTIC, NO SPECIFIED COLOR. LOCATED THROUGHTOUT THE BUILDING.	1500 SF		118421	Chrysotile: 3	No	Misc	Good			Not Visible	Low	Low Potential Damage
HGA	FM	ROOFING MATERIAL - COMPOSITE ROOF, THROUGH-OUT THE BUILDING	4500 SF		14299	Chrysotile: 2	No	Misc	Good			Not Visible	Low	Low Potential Damage
HGA	RB	CERAMIC TILE, 4 IN. RED	24 SF		117883	Chrysotile: 10	No	Misc	Damaged	<25%	Physical	Visible	Low	Low Potential Damage

\*\*\* Yellow rows indicated abated areas. Blue rows indicate removed areas.

**Assessment Index - FT-AAX, FT-EU, T-RB, FT-TA, FT-GQ**

Assessment Date : 5/17/2006

Assessment Grade : D

REPAIR - Initiate special O&M using certified personnel. Damaged areas should be repaired, where repair means returning damaged asbestos-containing building materials (ACBM) to an undamaged condition or to an intact state so as to contain fiber release. Schedule removal when practical and cost effective. Take preventive measures to reduce further damage.

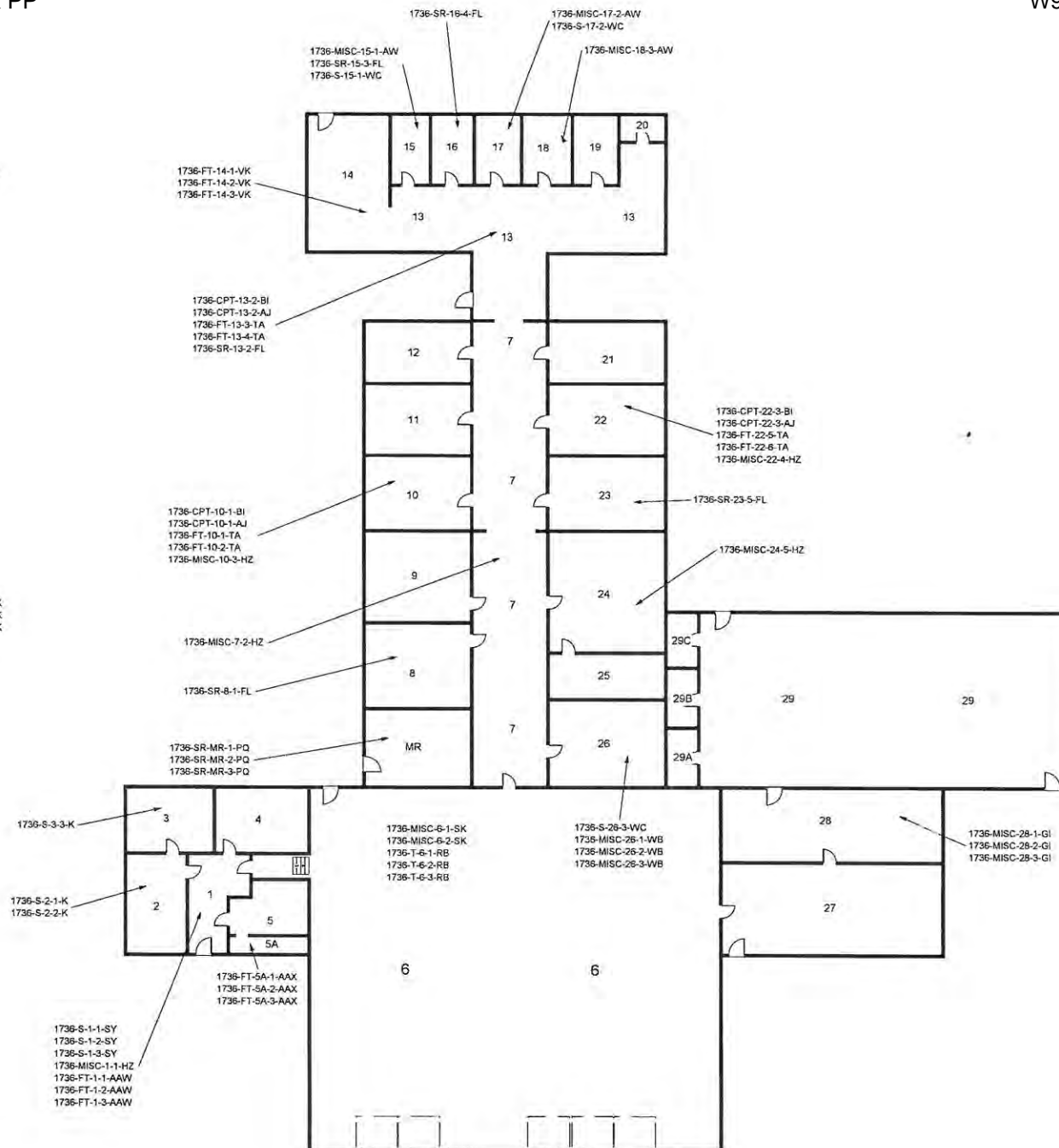
- Periodic re-inspection.
- Place in long term abatement plan.
- Notify Compliance Management Branch if floor tiles or mastic need to be removed.
- Maintenance and custodial workers who work around asbestos, but do not disturb asbestos shall have a minimum of two hours of awareness training.
- Disturbance of greater than 3 linear or 3 square feet shall require 40 hours training.
- Do not sand, grind, chip, abrade, drill, or mechanically disturb ACM containing floor tile.
- Dry buffer polish only.
- Label or place signs the Asbestos Containing Building Material (ACBM).
- Disturbance of ACM must be performed by appropriately trained personnel.
- Institute preventative measures to avoid damaging or disturbing ACM.
- Maintenance workers who disturb 3 linear or 3 square feet of ACM must have the appropriate 16 hours of training.
- Occupants/tenants and maintenance personnel will visually observe and report to CMB changes in the ACM being managed in place.
- When stripping ACM containing floors, the stripping machine must not exceed 300 rpm.
- If debris from the floor is discovered, immediately notify CMB.

- Periodic re-inspection.
- Place in long term abatement plan.
- Do not use a rotating blade roof cutter or similar device on ACM

- Label or place signs the Asbestos Containing Building Material (ACBM).
- Institute preventative measures to avoid damaging or disturbing ACM.

Building 1736  
May 11, 2006  
Inspector: Raywood Madison  
La. DEQ # 6I00732  
Asbestos Survey  
Basewide Inspection

EXTERIOR:  
1736-S-1-CZ  
1736-S-2-CZ  
1736-S-3-CZ  
1736-S-1-VV  
1736-S-2-VV  
1736-S-3-VV  
1736-S-4-VV  
1736-S-5-VV  
1736-MISC-3-SK  
1736-MISC-4-SK  
1736-MISC-5-SK



North



*Enclosure 7*

IMSE-POL-PWE

## MEMORANDUM FOR ENRMD, CB

SUBJECT: Report of Finding, Lead-Based Paint Inspection of Building 1736 Fort Polk, LA

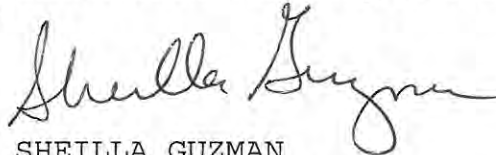
1. A focused inspection was conducted at Building 1736 on July 22, 2011, for the determination of the presence of any lead-based paint (LBP) hazards. Please understand that these results pertain only to that portion of the building for which renovation (work) actions are proposed. The results in this Report of Findings are not necessarily applicable to the remaining spaces in the building. The inspection was performed at the written request of the Environmental and Natural Resources Management Division, Conservation Branch (ENRMD, CB). Inspection results are to be used as part of the Record of Environmental Consideration (REC), ENRMD Control Number CY11147.

2. The focused inspection was performed by Mr. James Mayes (Certified Lead Inspector No. Pb10I00269), a representative of the Fort Polk ENRMD, Compliance Management Branch. Analysis was conducted using the XRF analyzer.

3. LEAD WAS DETECTED IN THE PAINT

4. Descriptions and locations of lead containing homogeneous Areas are listed at Enclosure 1. Number (3) above describes whether LBP was identified in areas impacted by the scope contained in (REC) CY11147. Sampling locations are identified at Enclosure 2.

5. For further technical information about interpretation of contamination levels and compliance with environmental regulations, contact Sheilla Guzman with the Compliance Management Branch at 531-9128



SHEILLA GUZMAN  
Environmental Officer

Encl  
As

CY11147 ENRMD Control Number

TABLE 2

Building Number: 1736

Address: Louisiana Ave.

XRF SERIAL NUMBER

1772

Inspector: Robert Garrison

Inspection Type: POTENTIAL LEAD BASE PAINTED COATED SURFACES

La Cert #: Pb06I00360

May 17, 2006

Unit # 20

Sample Identification	RM #	Building Component	Substrate Type	Paint Color	XRF Test Number	XRF Reading mg/cm2	Paint Condition			Hazard Classification (12)			Paint Chip Sample No.	Photo Number
							Intact	Fair	Poor	Immd Haz	Pont. Haz	Non-Haz		
8		SOUTH WALL	1	WALL	SHEET ROCK	BEIGE	8	0.3	X				X	
10		WEST WALL	1	WALL	SHEET ROCK	BEIGE	10	0.3	X				X	
19		EAST DOOR FRAME	1	DOOR FRAME	WOOD	BEIGE	19	0.1	X				X	
29		BASE	2	BASE	WOOD	STAIN	29	0.2	X				X	
38		BASE	4	BASE	WOOD	BROWN	38	0.4	X				X	
40		WEST WINDOW SILL	4	WINDOW SILL	WOOD	STAIN	40	0.4	X				X	
41		BASE	4	BASE	WOOD	BROWN	41	0.1	X				X	
42		CEILING VENT	4	CEILING VENT	METAL	WHITE	42	0.2	X				X	
43		CEILING T-GRID	4	T-GRID	METAL	GRAY	43	0.2	X				X	
45		NORTH WINDOW SILL	5	WINDOW SILL	WOOD	WHITE	45	0.2	X				X	
46		BASE	5	BASE	WOOD	WHITE	46	0.2	X				X	
47		CEILING	5A	CEILING	SHEET ROCK	WHITE	47	0.1	X				X	
49		NORTH BASE	6	BASE	CONCRETE	WHITE	49	0.6	X				X	
52		NORTH STAIRS	6	STAIRS	CONCRETE	BLACK	52	0.2	X				X	
55		FLOOR STRIP	6	FLOOR STRIP	CONCRETE	YELLOW	55	0.2	X				X	
57		SOUTH BASE	6	BASE	CONCRETE	WHITE	57	0.6	X				X	
63		SOUTH BASE	6	BASE	WOOD	WHITE	63	0.3	X				X	
65		WEST DOOR FRAME	6	DOOR FRAME	METAL	BROWN	65	0.1	X				X	
67		WEST BASE	6	BASE	CONCRETE	WHITE	67	0.5	X				X	
69		WEST DOOR	6	DOOR	WOOD	STAIN	69	0.1	X				X	
72		WEST HAND RAIL	6	HAND RAIL	WOOD	BLACK	72	0.3	X				X	
91		WEST CABINET	9	CABINET	WOOD	STAIN	91	0.1	X				X	
94		EAST BASE	9	BASE	WOOD	BEIGE	94	0.2	X				X	
95		NORTH WALL	11	WALL	SHEET ROCK	BEIGE	95	0.1	X				X	
100		EAST DOOR FRAME	11	DOOR FRAME	WOOD	STAIN	100	0.1	X				X	
101		BASE	11	BASE	WOOD	STAIN	101	0.1	X				X	
103		WEST DOOR FRAME	13	DOOR FRAME	WOOD	WHITE	103	0.1	X				X	
104		SOUTH WINDOW FRAME	14	WINDOW FRAME	WOOD	STAIN	104	0.3	X				X	
107		CEILING	14	CEILING	WALLBOARD	WHITE	107	0.1	X				X	
108		NORTH WALL	15	WALL	SHEET ROCK	BEIGE	108	0.1	X				X	
118		BASE	15	BASE	WOOD	WHITE	118	0.2	X				X	
122		SOUTH WALL	23	WALL	CORK	BROWN	122	0.1	X				X	
123		NORTH WALL	25	WALL	CERAMIC TILE	BEIGE	123	7.9	X				X	

1-1st Floor 2-2nd Floor

E - East N-North W-West S-South

Bk - Black Bl-Blue Br-Brown Rd-Red

SR-Sheetrock

Yl-Yellow Or-Orange

Wt-White Gy-Grey Gr-Green Bg-Beige

Enclosure 1

PAGE 1 OF 2

7/22/2011

CY11147 ENRMD Control Number

Friday, September 07, 2012



TABLE 2

Building Number: 1736

Address: Louisiana Ave.

XRF SERIAL NUMBER 1772

Inspector: Robert Garrison

Inspection Type: POTENTIAL LEAD BASE PAINTED COATED SURFACES

La Cert #: Pb06I00360

May 17, 2006

Unit # 20

Sample Identification	RM #	Building Component	Substrate Type	Paint Color	XRF Test Number	XRF Reading mg/cm2	Paint Condition			Hazard Classification (12)			Paint Chip Sample No.	Photo Number
							Intact	Fair	Poor	Immd Haz	Pont. Haz	Non-Haz		
124	EAST WALL	25	WALL	CERAMIC TILE	BEIGE	124	7.9	X			X			
125	SOUTH WALL	25	WALL	CERAMIC TILE	BEIGE	125	8.8	X			X			
126	WEST WALL	25	WALL	CERAMIC TILE	BEIGE	126	8.4	X			X			
129	NORTH DOOR FRAME	25	DOOR FRAME	WOOD	BEIGE	129	0.1	X			X			
133	SOUTH WALL PANEL	28	WALL	WOOD	STAIN	133	0.1	X			X			
135	EAST WINDOW FRAME	28	WINDOW FRAME	WOOD	BEIGE	135	0.1	X			X			
139	BASE	28	BASE	WOOD	STAIN	139	0.4	X			X			
144	WEST DOOR	29	DOOR	WOOD	BEIGE	144	0.1	X			X			
147	NORTH WALL	EXT	WALL	METAL	BEIGE	147	0.1	X			X			
151	EAST WALL	EXT	WALL	METAL	BEIGE	151	0.1	X			X			
153	EAST BALLARD	EXT	BALLARD	CONCRETE	RED	153	3.2	X		X				
154	EAST FLOOR STRIP	EXT	FLOOR STRIP	CONCRETE	YELLOW	154	1.5	X		X				
159	SOUTH WALL	EXT	WALL	METAL	BEIGE	159	0.2	X			X			
161	SOUTH DOOR FRAME	EXT	DOOR FRAME	METAL	BROWN	161	0.1	X			X			
162	SOUTH WINDOW CASING	EXT	WINDOW CASING	METAL	BROWN	162	0.1	X			X			
163	SOUTH BASE	EXT	BASE	CONCRETE	BROWN	163	0.2	X			X			
167	SOUTH FASCIA	EXT	FASCIA	METAL	BROWN	167	0.4	X			X			
168	WEST WALL	EXT	WALL	METAL	BEIGE	168	0.4	X			X			
170	WEST BASE	EXT	BASE	CONCRETE	YELLOW	170	0.3	X			X			
172	WEST DOOR FRAME	EXT	DOOR FRAME	METAL	BROWN	172	0.2	X			X			
173	WEST GAS PIPE	EXT	GAS PIPE	METAL	YELLOW	173	2.8	X		X				
174	WEST PORCH	EXT	PORCH	WOOD	STAIN	174	0.1	X			X			
176	WEST BASE	EXT	BASE	METAL	WHITE	176	0.1	X			X			

1-1st Floor 2-2nd Floor

E - East N-North W-West S-South

Bk - Black Bl-Blue Br-Brown Rd-Red

SR-Sheetrock

Yl-Yellow Or-Orange

Wt-White Gy-Grey Gr-Green Bg-Beige

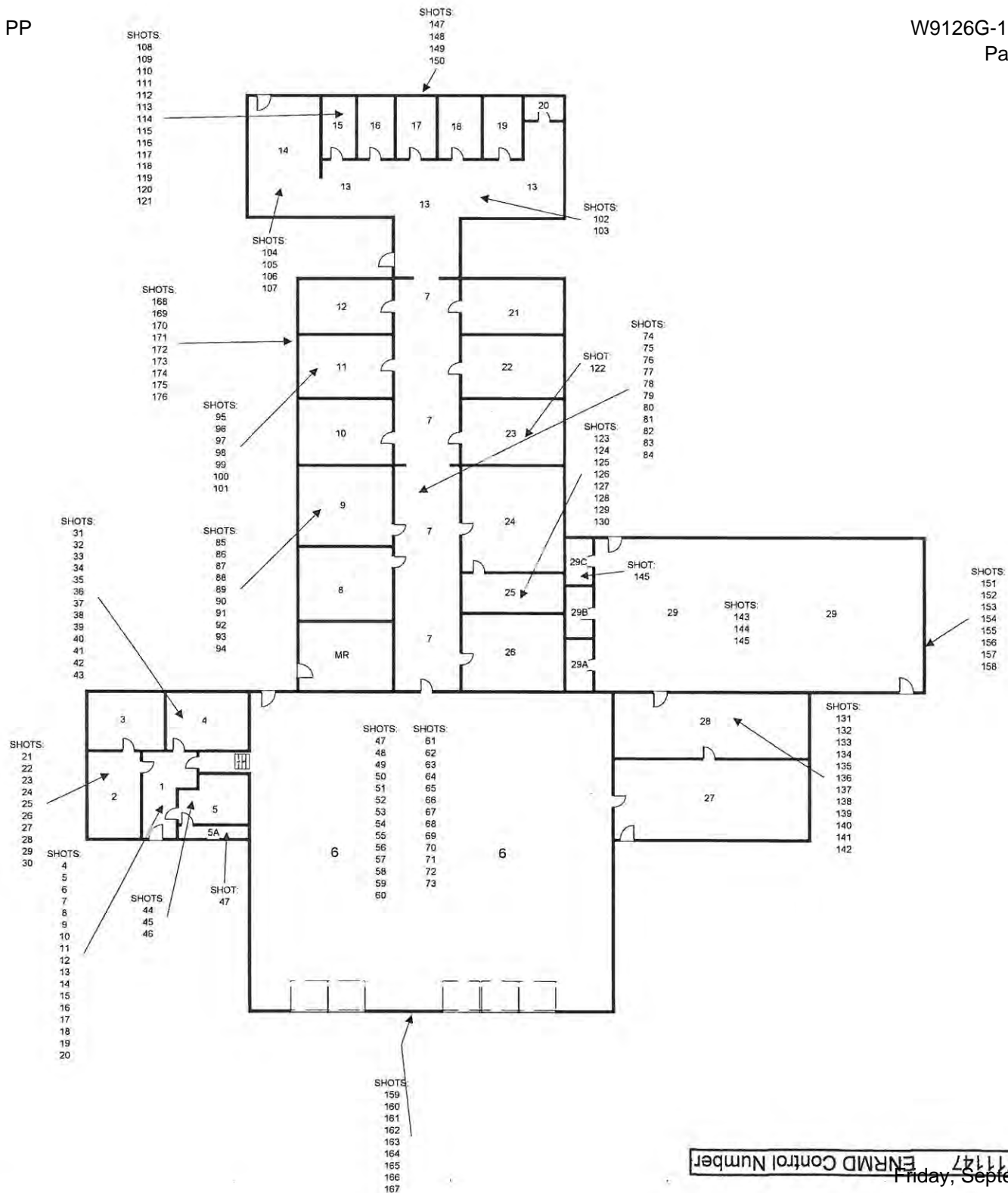
Enclosure 1

PAGE 2 OF 2

7/22/2011

Building 1736

Lead Drawing  
Inspector: Robert Garrison  
La. DEQ # Pb06100360  
Basewide Inspection  
May 11, 2006





## Client Sample Results

Client: U.S. Army  
Project/Site: 09-13-11 TCLP Lead

TestAmerica Job ID: 600-43381-1

Client Sample ID: FPL11-0132

Lab Sample ID: 600-43381-1

Date Collected: 09/13/11 00:00

Matrix: Solid

Date Received: 09/15/11 07:00

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	11		0.10		mg/L		09/19/11 08:45	09/20/11 09:12	1

CY 47 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 8*

**From:** Fitzgerald, Timothy B CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 2:59 PM  
**To:** Blume, Timothy CTR US USA; CEDARS, ALLISON Ms CIV USA IMCOM; Thames, Sara Ms CIV USA IMCOM; Walker, Zachary T CTR US USA

The following Recs require no comment from solid waste, 147-150 provided that they have been cleared for lead and asbestos

Tim Fitzgerald  
Compliance Management Branch  
Environmental and Natural Resources Management Division  
1647 23rd Street Bldg 2516  
Fort Polk, La 71403  
Comm: (337) 531.6029  
FAX: 531.8950  
E-Mail: [timothy.fitzgerald1@us.army.mil](mailto:timothy.fitzgerald1@us.army.mil)

CY11147 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM**

**From:** St. Romain, Phil Mr CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 8:38 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

The REC's below are not impacted by SWMU's.

CY11146 - Installation of 1000 Gallon Diesel Fuel Pod for VANTEX Porta Pot Service for Fort Polk and Rotational Units (W91248-10-D-002).

CY11147-11150 are demolition of Fire Station Facilities (1736, 1737, 1738, 1739). Attached is copy of RECs.

Phil St. Romain  
Chief, Environmental Compliance Branch  
1647 23rd St., Building 2516  
Fort Polk, Louisiana 71459  
Office: 337-531-0385  
DSN: 863-0385  
Work Cell: 337-208-3058  
FAX: 337-531-8950

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 7:35 AM  
**To:** St. Romain, Phil Mr CIV USA IMCOM; Gibson, Steven S CIV USA IMCOM  
**Subject:** SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

Mr. St. Romain,

Could you please review the following RECs for SWMU Statements?

CY11146 - Installation of 1000 Gallon Diesel Fuel Pod for VANTEX Porta Pot Service for Fort Polk and Rotational Units (W91248-10-D-002).

CY11147-11150 are demolition of Fire Station Facilities (1736, 1737, 1738, 1739). Attached is copy of RECs.

Mr. Gibson would the Fire Station Facilities qualify for any QRP opportunities?

Thank you,  
Allison Cedars

Section: Appendix PP  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
allison.m.cedars@us.army.mil

W9126G-12-U-1005-0009

Page 902 of 1082  
*Encl - 5/1/12*

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11147 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM**

Page 903 of 1082

**From:** Lantz, Jacob Mr CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 2:24 PM  
**To:** Thames, Sara Ms CIV USA IMCOM; Galvan, Leonard Mr CIV USA  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** RE: RECs-CY11147-11150 (UNCLASSIFIED)  
**Signed By:** jacob.lantz@us.army.mil

Classification: UNCLASSIFIED  
Caveats: FOUO

Use PN# 17220 for all, won't have a WR#. Continue processing, thanks.  
It is a DA1391 to demo the old fire station...

v/r  
Jake  
SRM Program Manager  
DPW, BOID  
531.6889

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 2:07 PM  
**To:** Lantz, Jacob Mr CIV USA IMCOM; Galvan, Leonard Mr CIV USA  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** RECs-CY11147-11150

Mr. Lantz/Mr. Galvan,

We received the attached RECs from DPW today(CY11147-Disposal of Bldg 1736; CY11148-Disposal of Bldg 1737; CY11149-Disposal of Bldg 1739; & CY11150-Disposal of Bldg 1739). Unfortunately, Mr. Fred Hartzell is not in today and will not be back to the office or a few days, so the RECs were picked up by someone else. I noticed that none of the RECs have work order numbers/project numbers. We recently received similar RECs for building disposal projects from Mr. Dennis Jackson that contained work order numbers/project numbers, so I wanted to check with you to make sure you are aware of these projects. Let me know if we need to add a work order number/project number to each REC or if they do not need a work order number/project number. Thanks!

Sara

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459  
e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)  
office: (337) 531-1653  
DSN: 863-1653

CY11147 ENRMD Control Number

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11147 ENRMD Control Number



CY11147 ENRMD Control Number

Section:



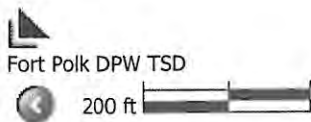
02.24.2009

#1736

5-3-1



CY11147 ENRMD Control Number



Scale 1 : 2398





## BUILDING NO. 1738

AFZX-PW-PS (420-10c)

June 8, 2011

MEMORANDUM FOR DPW, ENRMD

**SUBJECT: Disposal of Building 1738, Fort Polk, LA CPN# 17220).**

1. Request site-specific environmental evaluations for National Environmental Policy Act (NEPA) compliance, Clean Air Act Compliance (Title V) evaluation, asbestos, lead, etc., as applicable for the subject project.
2. Record of Environmental Consideration (REC) is enclosed for your review and concurrence. If your office concurs to the document enclosed, request a copy of the REC with concurrence be returned to this office as soon as possible. The project will be held pending your response.
3. Point of contact is Dennis Jackson, DPW Planning Division, 531-2092

Encl

A handwritten signature in black ink, appearing to read 'Scotty Goins', with a date '9 JUN 11' written below it.

Scotty Goins  
Chief, Planning Division

\*\*\* **Note:** REFER TO Attached (Report of Findings) which discloses presence or absence of Hazardous Materials. If present, Hazardous Material(s) must be removed prior to renovation.

EPSD/TSD Program Manager MUST Comply with attached Health and Safety Memorandums.

Friday, September 07, 2012

CY11149 ENRMD Control Number

**DEPARTMENT OF THE ARMY  
JOINT READINESS TRAINING CENTER AND FORT POLK  
FORT POLK, LOUISIANA 71459**

**RECORD OF ENVIRONMENTAL CONSIDERATION**

**To: Environmental Office**

**From: DPW Planning Division**

1. **Project Title:** Disposal of Building 1738 (PN# 17224).
2. **Brief Description of Proposed Action:** The Disposal of Building 1738, hauling of debris from sites to an approved landfill and restore site to satisfactory condition.
3. **Project Engineer/ Manager Determination:**

Environmental Parameters	YES	NO
1. Action will require DHH approval of water system changes.		X
2. Action will require DHH approval of wastewater changes.		X
3. Project footprint between 1 and 5 acres (storm water permit).	X	
4. Project footprint greater than 5 acres (storm water permit).		X
5. Action has the potential to disturb asbestos.	X	
6. Action has the potential to disturb lead based paint.	X	
7. Action is new construction (independent of existing structure).		X
8. If number 7 above was yes, were alternatives considered for the new construction.		
9. If number 8 above was yes was the Building Constraints map utilized for development of alternatives.		
10. If number 9 above was yes are the maps for three alternatives included in this Record of Environmental Consideration.		

4. **Purpose and Need:** This Facility will be replace under New Project Construction.
5. **Anticipated Date and/or duration of Proposed Action:** July 2013
6. **A Map is attached:** (Size 8.5" x 11" no greater than 8.5" x 14").
7. **Reason for using record of environmental consideration:** Action is categorically excluded under the provisions of categorical exclusion (CX) C-2 32 CFR 651, Appendix B [and no extraordinary circumstances exist and there are no adverse affects to sensitive resources, as defined in CFR 651.29(b), 651.29(c)] because: (1) See paragraph 8 below (Effects on the Environment), showing that there are no significant environmental impacts; and (2) this proposed action satisfies the screening conditions in 32 CFR 651.29(a), and meets all screening criteria in 32 CFR 651, Appendix B, Section I.
8. **Effects on the Environment:** The proposed action was evaluated by the proponent and an ENRMD Environmental Subject Matter Expert / Evaluator using the following parameters.

Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
Air Quality				Enclosure 3
Indoor Air Quality				Enclosure 4
Storm Water				Enclosure 5
Drinking/Waste Water Systems				Enclosure 5
Cultural Resources				Enclosure 5

CY11149 ENRMD Control Number



Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
Does the property qualify as historical property under the National Historic Preservation Act (NHPA)? <input checked="" type="checkbox"/> no yes (sign name) <u>Blair Gaffney</u> <u>See Enclosure 2</u>				
Timber				
Threatened/Endangered Species and Species of Concern				
MBTA				
Sensitive Plants or Bogs				
Wetlands				
Soils/Erosion Control				
Other Natural Resources				
Pest Management				
Noise				
* Asbestos				Enclosure 6
* Lead-based Paint				Enclosure 7
* Solid/ Hazardous Waste				Enclosure 8
Environmental Justice				
Protection of Children				
* Environmental Restoration/SWMU				Enclosure 9

CY11149 ENRMD Control Number

## 9. Coordination with other agencies and installation departments:

Installation Organization or Other Agency	Coordination Date	Coordinating Person
Coordination with ESPD/ Master Planning	03 June 2011	Scotty Goins
Coordination with ESPD/ Project Manager	03 June 2011	Shane Gremillion
* <u>Deafened Recycling Program (DRP)</u>	<u>24 June 2011</u>	<u>Steve Gibson - Enclosure 1</u>

## 10. NEPA Specialist survey report is attached as Appendix A.

11. **Conclusion:** This proposed action has been evaluated in accordance with 32 CFR Part 651. It has been determined that this proposed action does not individually or cumulatively have significant effects on the human or natural environment. There will be no environmentally controversial changes to existing environmental conditions. There are no circumstances which would require an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). This proposed action: (1) satisfies all screening conditions in 32 CFR 651.29(a); (2) meets all screening criteria in 32 CFR 651, Appendix B, Section I; (3) does not involve any extraordinary circumstances, as defined in 32 CFR 651.29(b), that would preclude the use of a CX; (4) will not adversely affect environmentally sensitive resources as defined in 32 CFR 651.29(c); (5) qualifies for categorical exclusion (CX) number(s) C-2 in accordance with 32 CFR 651, Appendix B, Section II.

12. **Other Environmental Laws:** This document does not relieve the proponent of applicable federal and state laws and regulations.

Project Proponent



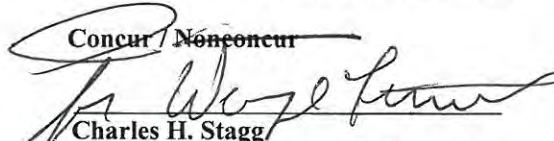
Name Dennis Jackson

Title Realty Specialist

Date June 03 2011

Installation Environmental Coordinator

Concur / Nonconcur



Charles H. Stagg

Chief, Environmental and Natural Resources Management Division

Directorate of Public Works

Date: 22 September 2011

\*\*\* Note: EPER 10 Attached (Report of Findings) which discloses presence or absence of Hazardous Materials. If present, Hazardous Material(s) must be removed prior to renovation.

EPSP/TSD Program Manager MUST Comply with attached Health and Safety Memorandums.

**DEPARTMENT OF THE ARMY**  
**JOINT READINESS TRAINING CENTER AND FORT POLK**  
 FORT POLK LOUISIANA 71459  
**ENVIRONMENTAL ANALYSIS/FIELD SURVEY REPORT**  
**Demolition/Disposal of Building 1738**  
**Associated with PN 17220**  
**CY11149**

CY11149

ENRMD Control Number

On June 13, 2011 a field survey was conducted by a NEPA staff member. An inspection of the site location was conducted as a baseline survey to evaluate potential impacts of the proposed action. The proposed actions are to demolish building, haul debris to an authorized landfill, and restore site with compatible material.

The proposed action is covered under categorical exclusion (CX) number C-2, 32 Code of Federal Regulations (CFR) 651 and by the following Environmental Assessment: "*Programmatic EA for Demolition of WWII and Family Housing Buildings at Fort Polk, Louisiana*; January 2001". CX, C-2 states, "Demolition of non-historic buildings, structures, or other improvements and disposal of debris therefrom, or removal of a part thereof for disposal, in accordance with applicable regulations, including those regulations applying to removal of asbestos, polychlorinated biphenyls (PCBs), lead-based paint, and other special hazard items (REC required)". This action meets the criteria for a categorical exclusion in accordance with (CX) number C-2 of 32 CFR Part 651.29, Appendix B, Section I and the proposed action poses no significant impact to the environment or human health. In order for a categorical exclusion to be used as stated in 32 CFR 651, a set of screening criteria must be met. Those screening criteria are listed below.

A CX may be used only when each of the following screening criteria is true:

- The action has NOT been segmented. **TRUE**
- The action does NOT have a reasonable likelihood of causing significant effects on public health, safety or the environment. **TRUE**
- This action does NOT cause an imposition of uncertain or unique environmental risks. **TRUE**
- This action is NOT of greater scope or size than is normal for this category of action. **TRUE**
- This action is NOT expected to produce reportable releases of hazardous or toxic substances as specified in 40 CFR part 302, Designation, Reportable Quantities, and Notification. **TRUE**
- This action is NOT expected to produce releases of petroleum, oils, and lubricants (POL) except from a properly functioning engine or vehicle, application of pesticides and herbicides, where the proposed action results in requirement to develop or amend a Spill Prevention, Control, or Counter Measure Plan. **TRUE**
- There is NO reasonable likelihood of this action violating any federal, state, or local law or requirements imposed for the protection of the environment. **TRUE**
- This action does NOT involve effects on the environment that are highly uncertain, involve unique or unknown risks, or are scientifically controversial. **TRUE**
- This action does NOT establish a precedent for future actions that are reasonably likely to have a future significant effect. **TRUE**
- This action is not expected to potentially degrade an already existing poor environment or effect areas not already significantly modified from their natural condition. **TRUE**
- This action is NOT expected to produce unresolved effects on (1) Proposed federally listed, threatened, or



endangered species or their designated critical habitats, (2) Properties listed or eligible for listing on the Natural Register of Historic Places, (3) Areas having special designation or recognition such as prime or unique agriculture lands; coastal zones; designated wilderness or wilderness study areas; wild and scenic rivers; National Historic Landmarks; 100-year flood plains; wetlands; sole source aquifers; National Wildlife Refuges; national Parks; areas of critical environmental concern; or other areas of high environmental sensitivity, or (4) Cultural Resources as defined in AR 200-4.

TRUE

- This is NOT a new Environmental Management System (EMS) Facility –Activity-Task TRUE
- This action does not require new EMS Operational Control (required) TRUE
- This action does not require new EMS competency training TRUE

### Conclusion of Findings

The following actions are covered under the EA, “*Programmatic EA for Demolition of WWII and Family Housing Buildings at Fort Polk, Louisiana*; January 2001”. All buildings are to be disposed in conjunction with Family Reduction Plan. All applicable Installation (dig permit, physical security, safety requirements .....), Federal, and State laws and regulations should be followed. **Please Note: Facility may qualify for the Qualified Recycling Program (QRP), see Enclosure 1. See Enclosure 2 for information regarding Historic Preservation. For specific natural resources of concern such as Air Quality, no significant air quality impacts are expected provided reasonable precautions are taken to prevent dust emissions during demolition or subsequent transport off the Installation. Furthermore, any comfort cooling system that may be associated with the structure must have the refrigerate i.e., Freon, removed per the requirements of 40 CFR Part 82 before disposal (Enclosure 3); Indoor Air Quality, presents no impact to indoor air quality (Enclosure 4); Storm Water, care must be taken to prevent disturbed sediment and other debris from entering the storm drains/storm water conveyance or surface water bodies (Enclosure 5); Drinking Water (Enclosure 5); Asbestos (Enclosure 6); Lead which was Detected (Enclosure 7); Hazardous/Solid Waste (Enclosure 8); and SWMU (Enclosure 9) a member of the Compliance Branch conducted an evaluation. This report will be attached to the REC as part of the NEPA documentation. If there are no changes in this scope of work or location of the proposed action, no other environmental analysis is planned.** In conclusion the nature of this action poses no significant environmental impacts to the environment. The proposed action meets the screening criteria for the completion of a Record of Environmental Consideration under categorical exclusion C-2 of the 32 CFR 651.



For Additional Information regarding survey, please contact the undersigned below.

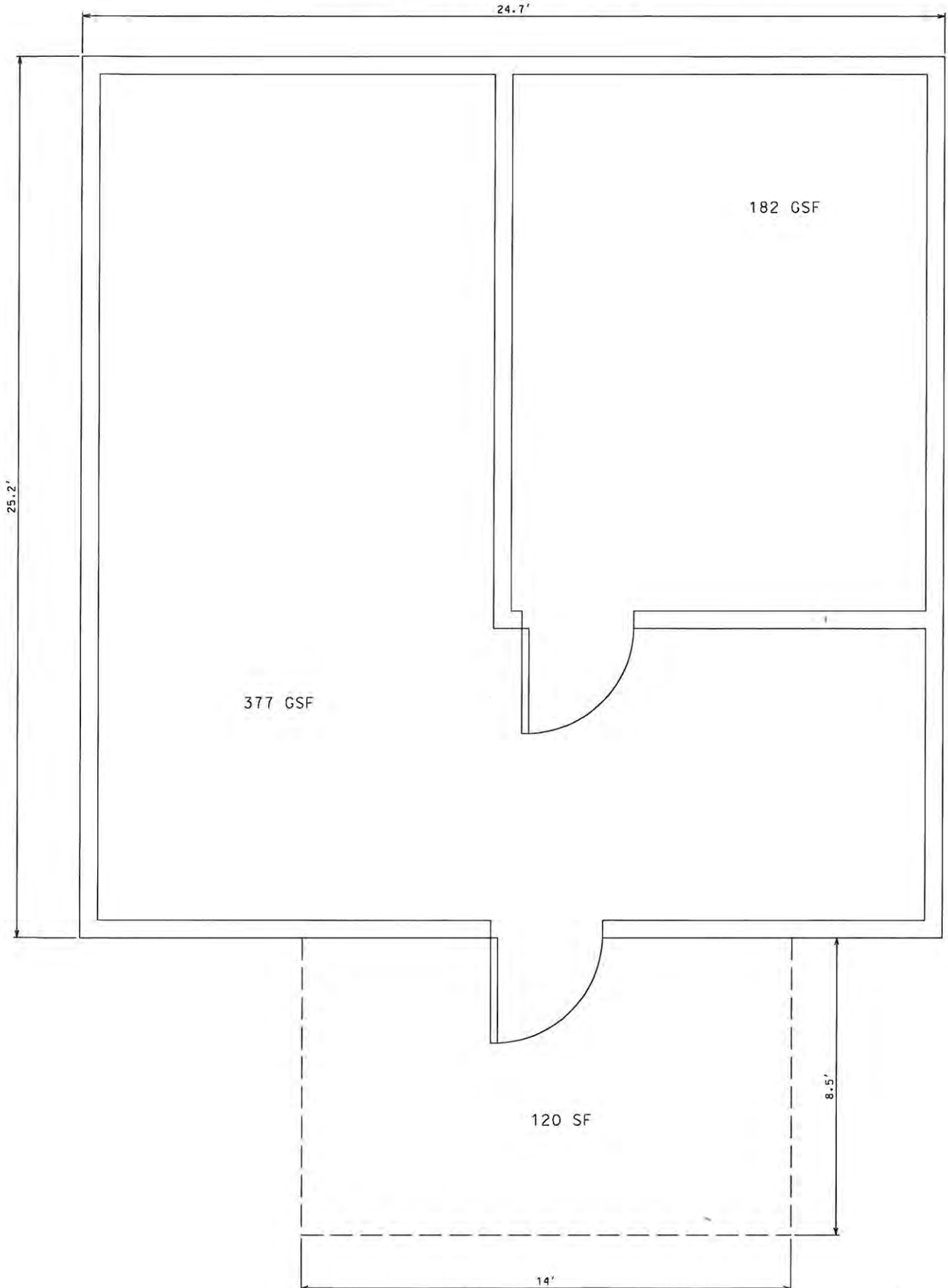


Allison Cedars  
Ecologist/NEPA Section  
DPW, ENRMD, Conservation Branch  
1697 23<sup>rd</sup> Street, Building 2543  
Fort Polk, LA 71459  
337-531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

CY11149 ENRMD Control Number

# BLDG 1738 - 621 GSF

## FIRE STATION No. 1 STORAGE BUILDING



CY11149 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 1*

**From:** Gibson, Steven S CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 11:01 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

Allison,

I conducted a recon of the facilities and there are recyclables to be salvaged from the demo operation.

We probably need to figure out how to get this in the demo contract, I can provide the roll off for scrap metal.

Steve

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 7:35 AM  
**To:** St. Romain, Phil Mr CIV USA IMCOM; Gibson, Steven S CIV USA IMCOM  
**Subject:** SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

Mr. St. Romain,

Could you please review the following RECs for SWMU Statements?

CY11146 - Installation of 1000 Gallon Diesel Fuel Pod for VANTEX Porta Pot Service for Fort Polk and Rotational Units (W91248-10-D-002).

CY11147-11150 are demolition of Fire Station Facilities (1736, 1737, 1738,1739). Attached is copy of RECs.

Mr. Gibson would the Fire Station Facilities qualify for any QRP opportunities?

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11149 ENRMD Control Number

Classification: UNCLASSIFIED

Caveats: FOUO

*Enclosure 1*

CY11149 ENRMD Control Number



Section: Appendix PP

DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
WASHINGTON, DC 20310-0111

November 16, 1993

REPLY TO  
ATTENTION OF

512173737222 P.02  
W9126G-12-U-1005-0009

Page 817 of 1082

Enclosure 2



Dr. Robert Bush  
Executive Director  
Advisory Council on Historic Preservation  
The Old Post Office Building, Suite 809  
1100 Pennsylvania Avenue, N.W.  
Washington, D.C. 20004

Dear Dr. Bush:

Under the terms of the June 7, 1986 Programmatic Memorandum of Agreement (PMOA) for the demolition of World War II Temporary Buildings, as amended on May 5, 1991, the Department of Defense (DoD) was required to undertake various actions to address the effects of the Congressionally mandated demolition of WWII temporary buildings. The enclosed documentation represents the result of work accomplished to meet all PMOA (as amended) stipulations for WWII temporary buildings.

The Historic American Building Survey/Historic American Engineering Record (HABS/HAER) documentation effort associated with the PMOA requirement was extensive. Of the 27,000 World War II temporary buildings in the DoD inventory, a total of 113 different building types were identified and documented in consultation with the HABS/HAER.

This extensive DoD effort has fulfilled the Army's obligations under the PMOA, and has fully addressed the effects of the Congressional order to demolish all WWII temporary buildings. Therefore, the Army will continue with the demolition effort without further restriction and in full compliance with the National Historic Preservation Act of 1966, as amended.

Sincerely,

Lewis D. Walker  
Deputy Assistant Secretary of the Army  
(Environment, Safety and Occupational Health)  
OASA (I, L&E)

Enclosure

CY11149 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 3*

**From:** Skinner, Harvey Mr CIV USA IMCOM  
**Sent:** Monday, June 13, 2011 3:00 PM  
**To:** Thames, Sara Ms CIV USA IMCOM  
**Cc:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: REC-CY11147 through CY11150 (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

After a review of the narrative contain in REC CY11147 through CY11150 no adverse air quality impacts are expected from the disposal of the buildings provided reasonable precautions to prevent fugitive dust are employed, during both the demolition and subsequent transport to the landfill.

Harvey Skinner  
Environmental Protection Specialist  
DPW/ENRMD/CMB  
1647 23rd Street BLDG. 2516  
Fort Polk, LA 71459-5509  
Comm: 337-531-6026  
Fax: 337-531-8950  
E-mail: [harvey.skinner@us.army.mil](mailto:harvey.skinner@us.army.mil)

CY11147  
ENRMD/CONSERVATION  
CY11147

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 1:54 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Madison, Raywood T CTR US USA; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Broussard, Nathan G Mr CIV USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Mayes, James W Mr CTR US USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** REC-CY11147

All,

The following REC has been submitted for environmental review:

CY11147 - Disposal of Building 1736..

Project evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars. Thx!

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459

Section: Appendix PP

e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)

office: (337) 531-1653

DSN: 863-1653

fax: (337) 531-2627

W9126G-12-U-1005-0009  
Page 919 of 1082

Classification: UNCLASSIFIED

Caveats: FOUO

CY11149 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 4*

**From:** Veillon, Tammy G Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 3:41 PM  
**To:** Thames, Sara Ms CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: REC-CY11149 (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

This REC presents no impact to IAQ.

-----Original Message-----

From: Thames, Sara Ms CIV USA IMCOM  
Sent: Thursday, June 09, 2011 1:57 PM  
To: Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Madison, Raywood T CTR US USA; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Broussard, Nathan G Mr CIV USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Mayes, James W Mr CTR US USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM  
Cc: Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
Subject: REC-CY11149

All,

The following REC has been submitted for environmental review:

CY11149 - Disposal of Building 1738.

Project evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars. Thx!

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459  
e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)  
office: (337) 531-1653  
DSN: 863-1653  
fax: (337) 531-2627

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11149 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 5*

**From:** Baker, Christina L CTR US USA  
**Sent:** Monday, June 13, 2011 12:06 PM  
**To:** Thames, Sara Ms CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: RECs-CY11148\_CY11149

In reference to the narrative provided and the environmental parameters selected for RECs CY11148-11150, please ensure that any exposed soil is stabilized through BMPs until vegetative or other stabilization has been achieved to prevent sedimentation into nearby storm conveyances or streams.

Christina Baker, Contractor  
Innovar Environmental Inc.  
DPW-ENRMD  
1647 23rd Street Building 2516  
Fort Polk, LA 71459-5509  
[Christina.baker2@us.army.mil](mailto:Christina.baker2@us.army.mil)  
COMM: 337.531.2894  
DSN: 863.2894  
FAX: 337.531.8950

CY11149 ENRMD Control Number

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 1:55 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Madison, Raywood T CTR US USA; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Broussard, Nathan G Mr CIV USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Mayes, James W Mr CTR US USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** REC-CY11148

All,

The following REC has been submitted for environmental review:

CY11148 - Disposal of Building 1737.

Project evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars. Thx!

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459  
e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)  
office: (337) 531-1653  
DSN: 863-1653  
fax: (337) 531-2627

Enclosure 6

IMSE-POL-PWE

## MEMORANDUM FOR ENRMD, CB

SUBJECT: Report of Finding, Asbestos Inspection of Building 1738 at Fort Polk, Louisiana

1. A focused inspection was conducted on Building 1738 July 22, 2011, for the determination of the presence of asbestos containing building materials (ACBM). Please understand that these results pertain only to that portion of the building for which renovation (work) actions are proposed. The results in this Report of Findings are not necessarily applicable to the remaining spaces in the building. The inspection was performed at the written request of the Environmental and Natural Resources Management Division, Conservation Branch (ENRMD, CB). Inspection results are to be used as part of the Record of Environmental Consideration (REC), ENRMD Control Number CY11149.

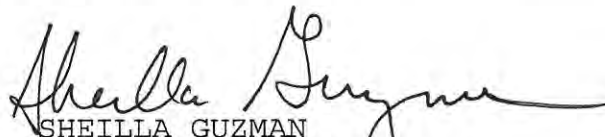
2. The focused inspection was performed by Mr. JAMES MAYES Certified Asbestos Inspector (No.1I03189) and a representative of the Fort Polk ENRMD, Compliance Management Branch. The samples were submitted to the ENRMD Laboratory for analysis.

3. Asbestos Containing Material Was Not Detected

4. Descriptions and locations of asbestos containing homogeneous areas are listed at Enclosure 1. Number (3) above describes whether ACBM was identified in areas impacted by the scope contained in (REC) CY11149. Sampling locations are identified at Enclosure 2.

5. For further technical information about interpretation of contamination levels and compliance with environmental regulations, contact Sheilla Guzman with the Compliance Management Branch at phone number 531-9128.

Encl  
as

  
SHEILLA GUZMAN  
Environmental Officer

CY11149 ENRMD Control Number



CY11149 ENRMD Control Number

## BUILDING 1738

Section:

Enclosure 6  
Building Name: STOR GP INST  
Description/Use: STORAGE  
Year Constructed: 1957  
Square Feet: 650  
Floors: 1  
Full Survey: Yes  
Certified: No

Are there areas that are inaccessible? Yes

Description of Inaccessible area(s): ABOVE CEILING

Reason Inaccessible: NO ACCESS

Potential ACMs in inaccessible area(s):

Estimated quantity of ACMs in inaccessible area(s):

### Table 1 Asbestos Containing Homogeneous Areas

NO HOMOGENEOUS AREAS WITH POSITIVE SAMPLES TO BE SHOWN FOR THIS BUILDING

Enclosure 6

BUILDING 1738  
DATE 6-16-2011  
INSPECTION: ASBESTOS  
INSPECTOR : J.MAYES

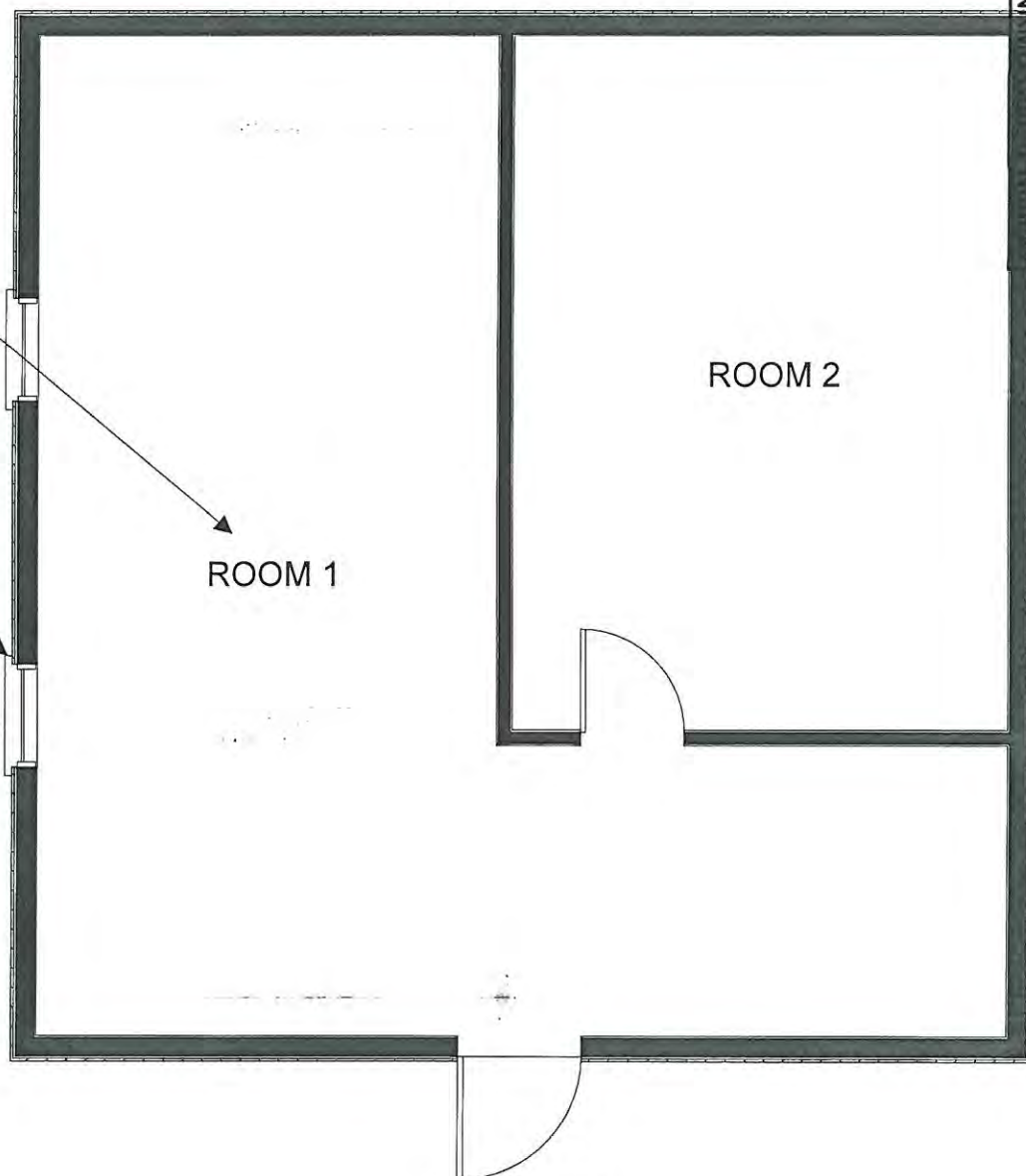
CY11149

ENR 11149

1738-SR-1-1-FL  
1738-SR-1-2-FL  
1738-SR-1-3-FL  
1738-SR1-4-FL  
1738-SR-1-5-FL

1738-MISC-EXT-1-BP  
1738-MISC-EXT-2-BP  
1738-MISC-EXT-3-BP

1738-MISC-EXT-1-JR  
1738-MISC-EXT-2-JR  
1738-MISC-EXT-3-JR



ROOM 1

ROOM 2

LIVING AREA  
623 sq ft

ROOM 1

IMSE-POL-PWE

MEMORANDUM FOR ENRMD, CB

SUBJECT: Report of Finding, Lead-Based Paint Inspection of Building 1738 Fort Polk, LA

1. An inspection was conducted at Building 1738, on July 22, 2011, for the determination of the presence of any lead-based paint (LBP) hazards. The inspection was performed at the written request of the Environmental and Natural Resources Management Division, Conservation Branch (ENRMD, CB). Inspection results are to be used as part of the Record of Environmental Consideration (REC), ENRMD Control Number CY11149.


2. The inspection was performed by Mr. James Mayes (Certified Lead Inspector No. Pb11I00269), a representative of the Fort Polk ENRMD, Compliance Management Branch. Analysis was conducted using the XRF analyzer.

3. LEAD WAS DETECTED IN THE PAINT

4. Descriptions and locations of lead containing homogeneous Areas are listed at Enclosure 1. Number (3) above describes whether LBP was identified in areas impacted by the scope contained in (REC) CY11149. Sampling locations are identified at Enclosure 2.

5. For further technical information about interpretation of contamination levels and compliance with environmental regulations, contact Sheilla Guzman with the Compliance Management Branch at 531-9128

Encl  
As

  
SHEILLA GUZMAN  
Environmental Officer

CY11149 ENRMD Control Number

BLDG.1737,1738,1739,1741

**XRF SERIAL NUMBER**

1807

Inspector: James Mayes

La Cert #: PB 11100269

Unit # 10

Enclosure 1



# Client Sample Results

Client: U.S. Army  
Project/Site: 09-01-11 TCLP Pb

TestAmerica Job ID: 600-43049-1

Client Sample ID: FPL11-0128

Lab Sample ID: 600-43049-1

Date Collected: 09/01/11 00:00

Matrix: Solid

Date Received: 09/07/11 09:01

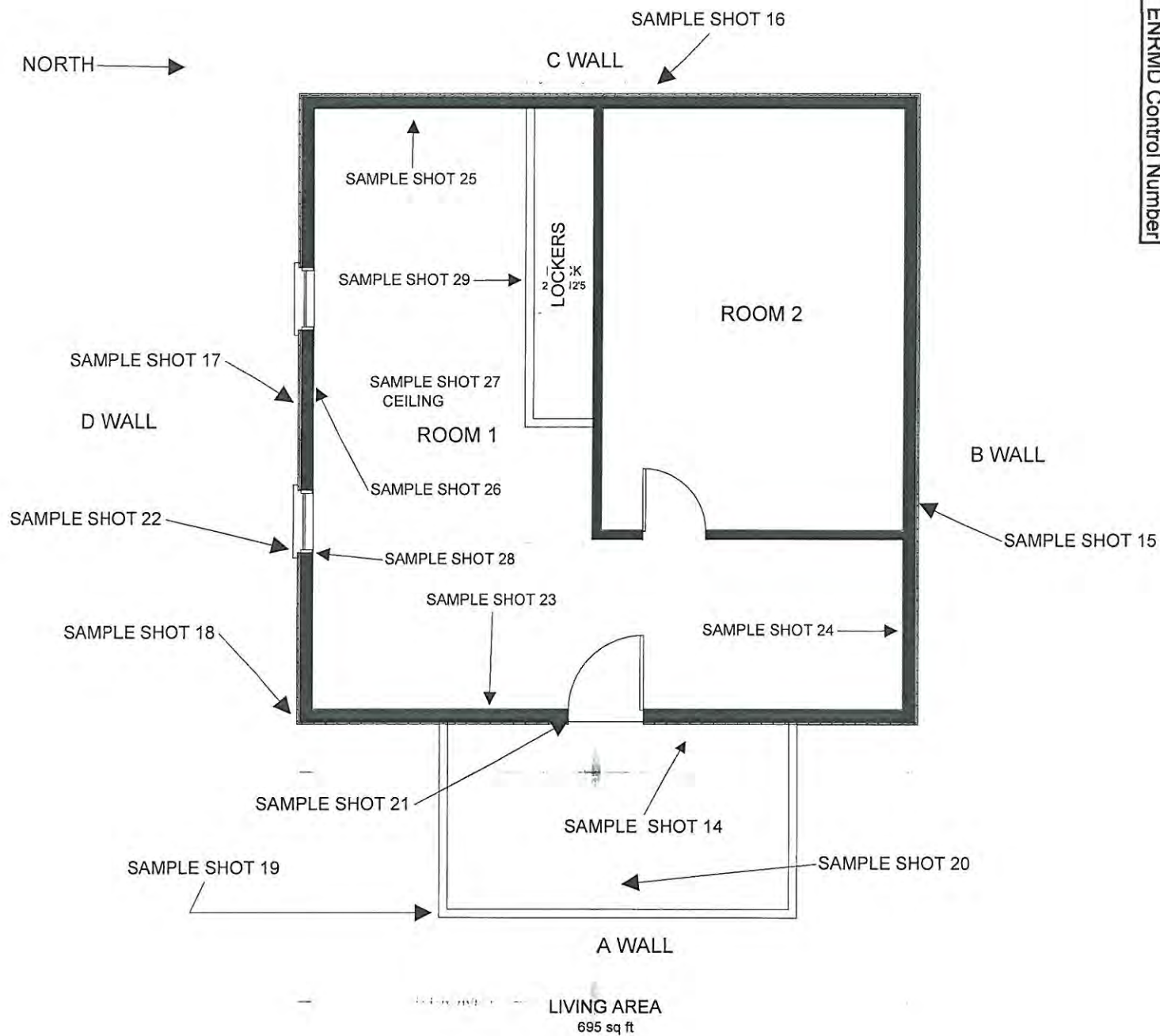
Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.9		0.10		mg/L		09/12/11 09:56	09/13/11 09:52	1

49 - ENRMD Control Number

BUILDING 1738  
DATE 6-16-2011  
INSPECTION: LEAD BASED PAINT  
INSPECTOR : J.MAYES

CY11149 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 8*

**From:** Fitzgerald, Timothy B CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 2:59 PM  
**To:** Blume, Timothy CTR US USA; CEDARS, ALLISON Ms CIV USA IMCOM; Thames, Sara Ms CIV USA IMCOM; Walker, Zachary T CTR US USA

The following Recs require no comment from solid waste, 147-150 provided that they have been cleared for lead and asbestos

Tim Fitzgerald  
Compliance Management Branch  
Environmental and Natural Resources Management Division  
1647 23rd Street Bldg 2516  
Fort Polk, La 71403  
Comm: (337) 531.6029  
FAX: 531.8950  
E-Mail: [timothy.fitzgerald1@us.army.mil](mailto:timothy.fitzgerald1@us.army.mil)

CY11149 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 9*

**From:** St. Romain, Phil Mr CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 8:38 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

The REC's below are not impacted by SWMU's.

CY11146 - Installation of 1000 Gallon Diesel Fuel Pod for VANTEX Porta Pot Service for Fort Polk and Rotational Units (W91248-10-D-002).

CY11147-11150 are demolition of Fire Station Facilities (1736, 1737, 1738,1739). Attached is copy of RECs.

Phil St. Romain  
Chief, Environmental Compliance Branch  
1647 23rd St., Building 2516  
Fort Polk, Louisiana 71459  
Office: 337-531-0385  
DSN: 863-0385  
Work Cell: 337-208-3058  
FAX: 337-531-8950

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 7:35 AM  
**To:** St. Romain, Phil Mr CIV USA IMCOM; Gibson, Steven S CIV USA IMCOM  
**Subject:** SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

Mr. St. Romain,

Could you please review the following RECs for SWMU Statements?

CY11146 - Installation of 1000 Gallon Diesel Fuel Pod for VANTEX Porta Pot Service for Fort Polk and Rotational Units (W91248-10-D-002).

CY11147-11150 are demolition of Fire Station Facilities (1736, 1737, 1738,1739). Attached is copy of RECs.

Mr. Gibson would the Fire Station Facilities qualify for any QRP opportunities?

Thank you,  
Allison Cedars



Section: Appendix PP

W9126G-12-U-1005-0009

Ecologist/NEPA Section

Page 931 of 1082

Civilian

*Enclosure 9*

DPW, ENRMD, Conservation Branch

1697 23rd Street, Building 2543

Fort Polk, LA 71459

Office: (337) 531-6725

[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED

Caveats: FOUO

Classification: UNCLASSIFIED

Caveats: FOUO

CY11149 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM**

**From:** Lantz, Jacob Mr CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 2:24 PM  
**To:** Thames, Sara Ms CIV USA IMCOM; Galvan, Leonard Mr CIV USA  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** RE: RECs-CY11147-11150 (UNCLASSIFIED)  
**Signed By:** jacob.lantz@us.army.mil

Classification: UNCLASSIFIED  
Caveats: FOUO

Use PN# 17220 for all, won't have a WR#. Continue processing, thanks.  
It is a DA1391 to demo the old fire station...

v/r  
Jake  
SRM Program Manager  
DPW, BOID  
531.6889

CY11149 ENRMD Control Number

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 2:07 PM  
**To:** Lantz, Jacob Mr CIV USA IMCOM; Galvan, Leonard Mr CIV USA  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** RECs-CY11147-11150

Mr. Lantz/Mr. Galvan,

We received the attached RECs from DPW today(CY11147-Disposal of Bldg 1736; CY11148-Disposal of Bldg 1737; CY11149-Disposal of Bldg 1739; & CY11150-Disposal of Bldg 1739). Unfortunately, Mr. Fred Hartzell is not in today and will not be back to the office or a few days, so the RECs were picked up by someone else. I noticed that none of the RECs have work order numbers/project numbers. We recently received similar RECs for building disposal projects from Mr. Dennis Jackson that contained work order numbers/project numbers, so I wanted to check with you to make sure you are aware of these projects. Let me know if we need to add a work order number/project number to each REC or if they do not need a work order number/project number. Thanks!

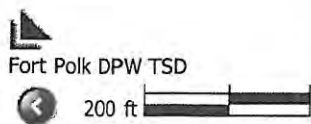
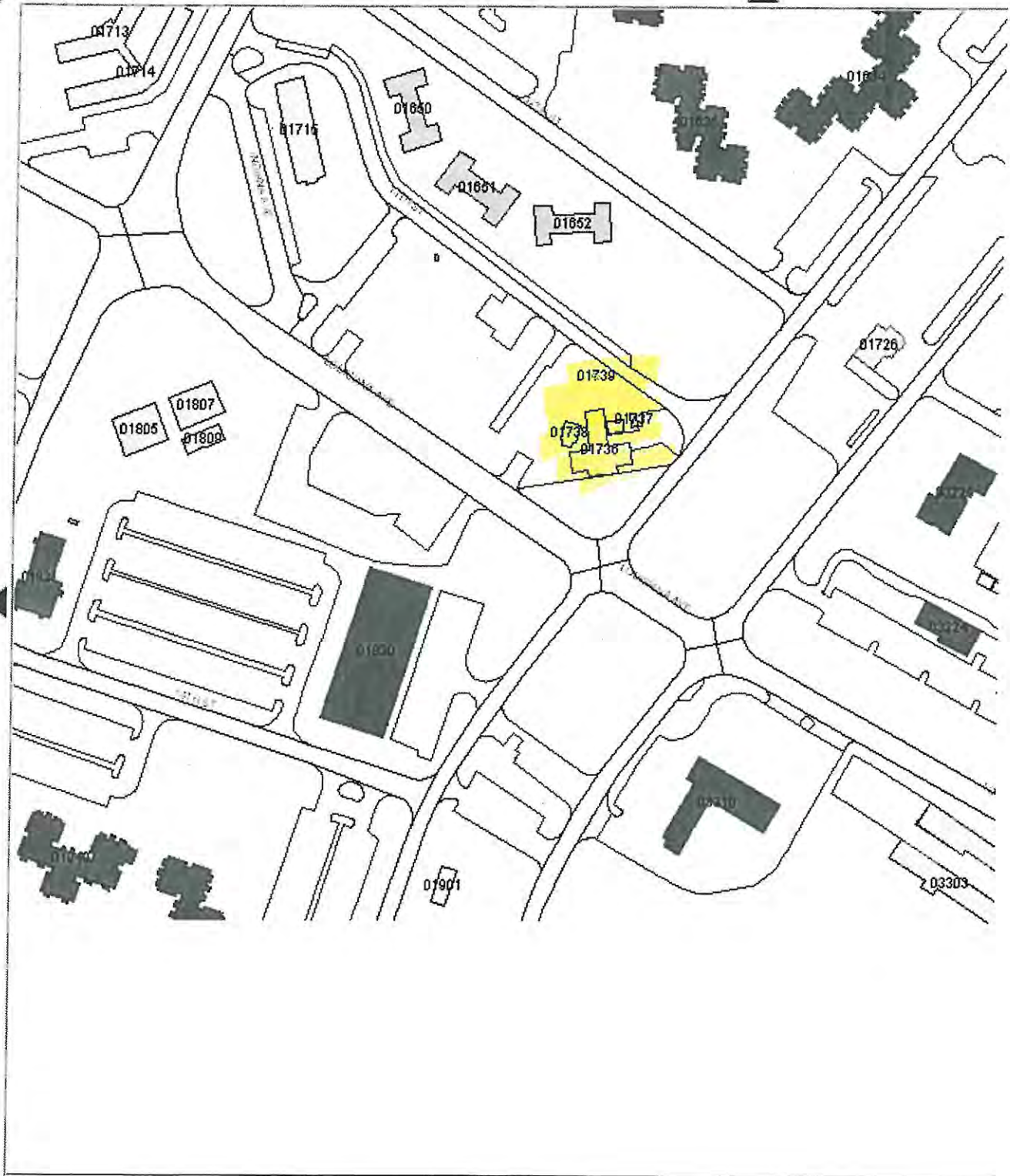
Sara

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459  
e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)  
office: (337) 531-1653  
DSN: 863-1653

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11149 ENRMD Control Number

CY11149 ENRMD Control Number



Scale 1 : 2398





CY11149 ENRMD Control Number

Section:

CAUTION  
HIGH NOISE AREA  
WEAR EAR  
PROTECTION

## BUILDING NO. 1739

AFZX-PW-PS (420-10c)


June 8, 2011

MEMORANDUM FOR DPW, ENRMD

**SUBJECT: Disposal of Building 1739, Fort Polk, LA (PN# 1722Φ).**

1. Request site-specific environmental evaluations for National Environmental Policy Act (NEPA) compliance, Clean Air Act Compliance (Title V) evaluation, asbestos, lead, etc., as applicable for the subject project.
2. Record of Environmental Consideration (REC) is enclosed for your review and concurrence. If your office concurs to the document enclosed, request a copy of the REC with concurrence be returned to this office as soon as possible. The project will be held pending your response.
3. Point of contact is Dennis Jackson, DPW Planning Division, 531-2092

Encl



9 JUN 11  
Scotty Goins  
Chief, Planning Division

CY11150 ENRMD Control Number



**DEPARTMENT OF THE ARMY  
JOINT READINESS TRAINING CENTER AND FORT POLK  
FORT POLK, LOUISIANA 71459**

**RECORD OF ENVIRONMENTAL CONSIDERATION**

**To: Environmental Office**

**From: DPW Planning Division**

1. **Project Title:** Disposal of Building 1739 (PN# 17228).
2. **Brief Description of Proposed Action:** The Disposal of Building 1739, hauling of debris from sites to an approved landfill and restore site to satisfactory condition.
3. **Project Engineer/ Manager Determination:**

Environmental Parameters	YES	NO
1. Action will require DHH approval of water system changes.		X
2. Action will require DHH approval of wastewater changes.		X
3. Project footprint between 1 and 5 acres (storm water permit).	X	
4. Project footprint greater than 5 acres (storm water permit).		X
5. Action has the potential to disturb asbestos.	X	
6. Action has the potential to disturb lead based paint.	X	
7. Action is new construction (independent of existing structure).		X
8. If number 7 above was yes, were alternatives considered for the new construction.		
9. If number 8 above was yes was the Building Constraints map utilized for development of alternatives.		
10. If number 9 above was yes are the maps for three alternatives included in this Record of Environmental Consideration.		

4. **Purpose and Need:** This Facility will be replace under New Project Construction.
5. **Anticipated Date and/or duration of Proposed Action:** July 2013
6. **A Map is attached:** (Size 8.5" x 11" no greater than 8.5" x 14").
7. **Reason for using record of environmental consideration:** Action is categorically excluded under the provisions of categorical exclusion (CX) C-2 32 CFR 651, Appendix B [and no extraordinary circumstances exist and there are no adverse affects to sensitive resources, as defined in CFR 651.29(b), 651.29(c)] because: (1) See paragraph 8 below (Effects on the Environment), showing that there are no significant environmental impacts; and (2) this proposed action satisfies the screening conditions in 32 CFR 651.29(a), and meets all screening criteria in 32 CFR 651, Appendix B, Section I.
8. **Effects on the Environment:** The proposed action was evaluated by the proponent and an ENRMD Environmental Subject Matter Expert / Evaluator using the following parameters.

Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
* Air Quality				Enclosure 3
* Indoor Air Quality				Enclosure 4
* Storm Water				Enclosure 5
* Drinking/Waste Water Systems				Enclosure 5
* Cultural Resources			BY	BY

CY11150 ENRMD Control Number



Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
Does the property qualify as historical property under the National Historic Preservation Act (NHPA)? <input checked="" type="checkbox"/> yes (sign name) <u>Brian Duffie</u> <span style="float: right;">Enclosure 2</span>				
Timber				
Threatened/Endangered Species and Species of Concern				
MBTA				
Sensitive Plants or Bogs				
Wetlands				
Soils/Erosion Control				
Other Natural Resources				
Pest Management				
Noise				
Asbestos				
Lead -based Paint				Enclosure 7
Solid/ Hazardous Waste				Enclosure 8
Environmental Justice				
Protection of Children				
Environmental Restoration/SWMU				Enclosure 9

CY11150 ENRMD Control Number

## 9. Coordination with other agencies and installation departments:


Installation Organization or Other Agency	Coordination Date	Coordinating Person
Coordination with ESPD/ Master Planning	03 June 2011	Scotty Goins
Coordination with ESPD/ Project Manager	03 June 2011	Shane Gremillion
Coordination with Pollution Prevention Manager	24 June 2011	Steve Gibson Enclosure 1

## 10. NEPA Specialist survey report is attached as Appendix A.

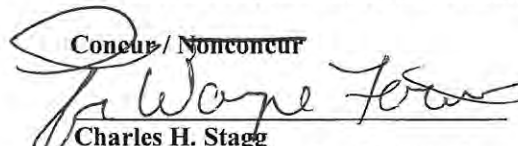
11. **Conclusion:** This proposed action has been evaluated in accordance with 32 CFR Part 651. It has been determined that this proposed action does not individually or cumulatively have significant effects on the human or natural environment. There will be no environmentally controversial changes to existing environmental conditions. There are no circumstances which would require an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). This proposed action: (1) satisfies all screening conditions in 32 CFR 651.29(a); (2) meets all screening criteria in 32 CFR 651, Appendix B, Section I; (3) does not involve any extraordinary circumstances, as defined in 32 CFR 651.29(b), that would preclude the use of a CX; (4) will not adversely affect environmentally sensitive resources as defined in 32 CFR 651.29(c); (5) qualifies for categorical exclusion (CX) number(s) C-2 in accordance with 32 CFR 651, Appendix B, Section II.

12. **Other Environmental Laws:** This document does not relieve the proponent of applicable federal and state laws and regulations.

## Project Proponent

  
 Name Dennis Jackson  
 Title Reality Specialist  
 Date June 03 2011

## Installation Environmental Coordinator

Concur/ Nonconcur  
  
 Charles H. Stagg  
 Chief, Environmental and Natural  
 Resources Management Division  
 Directorate of Public Works  
 Date: 6/11/11  
8 August 2011

**DEPARTMENT OF THE ARMY**  
**JOINT READINESS TRAINING CENTER AND FORT POLK**  
 FORT POLK LOUISIANA 71459  
**ENVIRONMENTAL ANALYSIS/FIELD SURVEY REPORT**  
**Demolition/Disposal of Building 1739**  
**Associated with PN 17220**  
**CY11150**

CY11150 ENRMD Control Number

On June 13, 2011 a field survey was conducted by a NEPA staff member. An inspection of the site location was conducted as a baseline survey to evaluate potential impacts of the proposed action. The proposed actions are to demolish building, haul debris to an authorized landfill, and restore site with compatible material.

The proposed action is covered under categorical exclusion (CX) number C-2, 32 Code of Federal Regulations (CFR) 651 and by the following Environmental Assessment: "*Programmatic EA for Demolition of WWII and Family Housing Buildings at Fort Polk, Louisiana*; January 2001". CX, C-2 states, "Demolition of non-historic buildings, structures, or other improvements and disposal of debris therefrom, or removal of a part thereof for disposal, in accordance with applicable regulations, including those regulations applying to removal of asbestos, polychlorinated biphenyls (PCBs), lead-based paint, and other special hazard items (REC required)". This action meets the criteria for a categorical exclusion in accordance with (CX) number C-2 of 32 CFR Part 651.29, Appendix B, Section I and the proposed action poses no significant impact to the environment or human health. In order for a categorical exclusion to be used as stated in 32 CFR 651, a set of screening criteria must be met. Those screening criteria are listed below.

A CX may be used only when each of the following screening criteria is true:

- The action has NOT been segmented. **TRUE**
- The action does NOT have a reasonable likelihood of causing significant effects on public health, safety or the environment. **TRUE**
- This action does NOT cause an imposition of uncertain or unique environmental risks. **TRUE**
- This action is NOT of greater scope or size than is normal for this category of action. **TRUE**
- This action is NOT expected to produce reportable releases of hazardous or toxic substances as specified in 40 CFR part 302, Designation, Reportable Quantities, and Notification. **TRUE**
- This action is NOT expected to produce releases of petroleum, oils, and lubricants (POL) except from a properly functioning engine or vehicle, application of pesticides and herbicides, where the proposed action results in requirement to develop or amend a Spill Prevention, Control, or Counter Measure Plan. **TRUE**
- There is NO reasonable likelihood of this action violating any federal, state, or local law or requirements imposed for the protection of the environment. **TRUE**
- This action does NOT involve effects on the environment that are highly uncertain, involve unique or unknown risks, or are scientifically controversial. **TRUE**
- This action does NOT establish a precedent for future actions that are reasonably likely to have a future significant effect. **TRUE**
- This action is not expected to potentially degrade an already existing poor environment or effect areas not already significantly modified from their natural condition. **TRUE**
- This action is NOT expected to produce unresolved effects on (1) Proposed federally listed, threatened, or



endangered species or their designated critical habitats, (2) Properties listed or eligible for listing on the Natural Register of Historic Places, (3) Areas having special designation or recognition such as prime or unique agriculture lands; coastal zones; designated wilderness or wilderness study areas; wild and scenic rivers; National Historic Landmarks; 100-year flood plains; wetlands; sole source aquifers; National Wildlife Refuges; national Parks; areas of critical environmental concern; or other areas of high environmental sensitivity, or (4) Cultural Resources as defined in AR 200-4. TRUE

- This is NOT a new Environmental Management System (EMS) Facility –Activity-Task TRUE
- This action does not require new EMS Operational Control (required) TRUE
- This action does not require new EMS competency training TRUE

### Conclusion of Findings

The following actions are covered under the EA, “*Programmatic EA for Demolition of WWII and Family Housing Buildings at Fort Polk, Louisiana*; January 2001”. All buildings are to be disposed in conjunction with Family Reduction Plan. All applicable Installation (dig permit, physical security, safety requirements .....), Federal, and State laws and regulations should be followed. **Please Note: Facility may qualify for the Qualified Recycling Program (QRP), see Enclosure 1. See Enclosure 2 for information regarding Historic Preservation. For specific natural resources of concern such as Air Quality, no significant air quality impacts are expected provided reasonable precautions are taken to prevent dust emissions during demolition or subsequent transport off the Installation. Furthermore, any comfort cooling system that may be associated with the structure must have the refrigerate i.e., Freon, removed per the requirements of 40 CFR Part 82 before disposal (Enclosure 3); Indoor Air Quality, presents no impact to indoor air quality (Enclosure 4); Storm Water, care must be taken to prevent disturbed sediment and other debris from entering the storm drains/storm water conveyance or surface water bodies (Enclosure 5); Drinking Water (Enclosure 5); Asbestos (Enclosure 6); Lead (Enclosure 7); Hazardous/Solid Waste (Enclosure 8); and SWMU (Enclosure 9) a member of the Compliance Branch conducted an evaluation. This report will be attached to the REC as part of the NEPA documentation. If there are no changes in this scope of work or location of the proposed action, no other environmental analysis is planned.** In conclusion the nature of this action poses no significant environmental impacts to the environment. The proposed action meets the screening criteria for the completion of a Record of Environmental Consideration under categorical exclusion C-2 of the 32 CFR 651.



For Additional Information regarding survey, please contact the undersigned below.



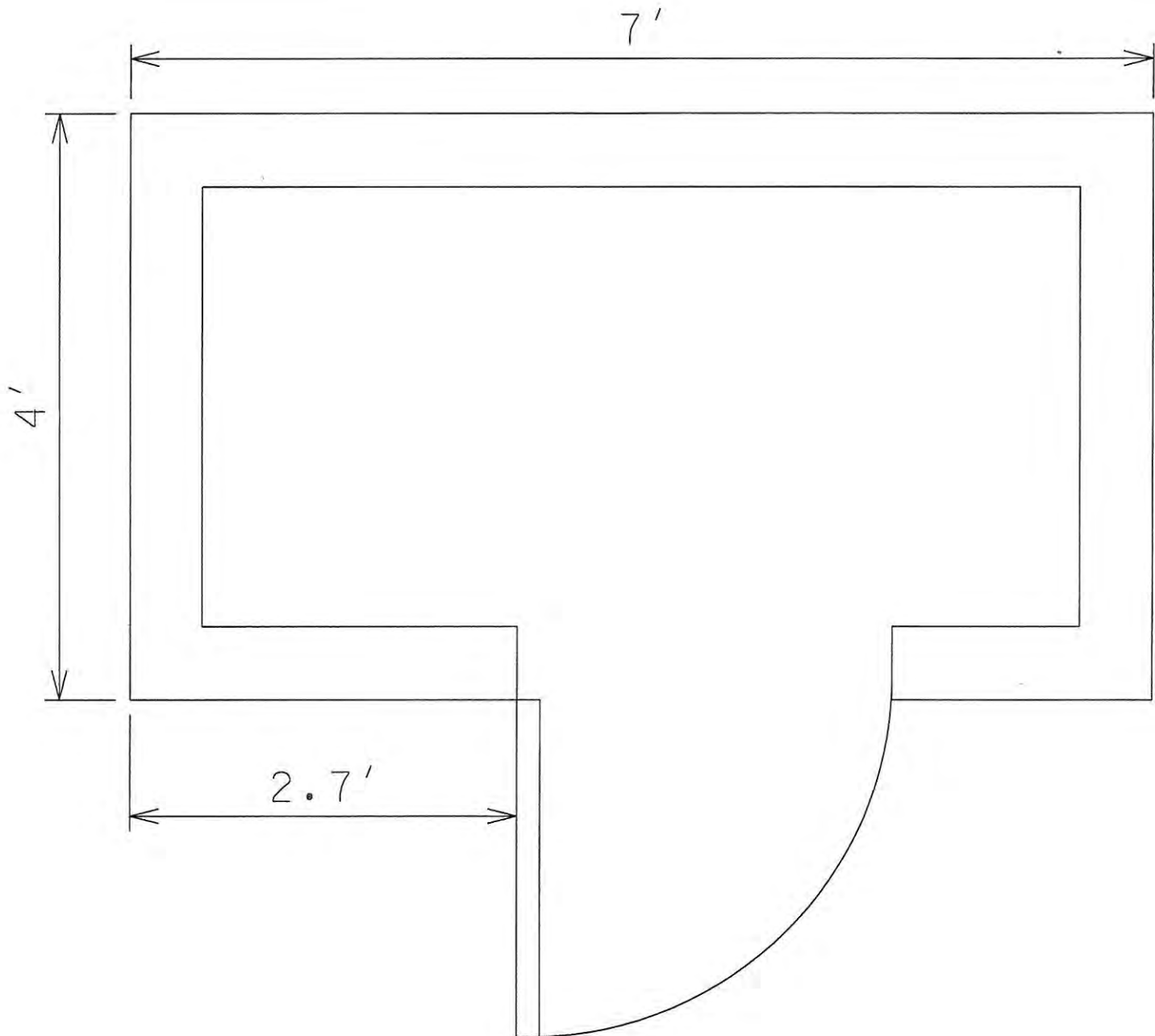
Allison Cedars  
Ecologist/NEPA Section  
DPW, ENRMD, Conservation Branch  
1697 23<sup>rd</sup> Street, Building 2543  
Fort Polk, LA 71459  
337-531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

CY11150 ENRMD Control Number

# BLDG 1739 - 28 GSF

## FIRE STATION No. 1 FLAMMABLE MATERIALS STORAGE BUILDING

CY11150 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM**

---

**From:** Gibson, Steven S CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 11:01 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

Allison,

I conducted a recon of the facilities and there are recyclables to be salvaged from the demo operation.

We probably need to figure out how to get this in the demo contract, I can provide the roll off for scrap metal.

Steve

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 7:35 AM  
**To:** St. Romain, Phil Mr CIV USA IMCOM; Gibson, Steven S CIV USA IMCOM  
**Subject:** SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

Mr. St. Romain,

Could you please review the following RECs for SWMU Statements?

CY11146 - Installation of 1000 Gallon Diesel Fuel Pod for VANTEX Porta Pot Service for Fort Polk and Rotational Units (W91248-10-D-002).

CY11147-11150 are demolition of Fire Station Facilities (1736, 1737, 1738,1739). Attached is copy of RECs.

Mr. Gibson would the Fire Station Facilities qualify for any QRP opportunities?

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED

Caveats: FOUO

CY11150 ENRMD Control Number

Classification: UNCLASSIFIED

Caveats: FOUO

CY11150 ENRMD Control Number





Section: Appendix PP

ENCLOSURE 20

912173737222 P.02  
W9126G-12-U-1005-0000

Page 8 of 1082

DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
WASHINGTON, DC 20310-0111

November 16, 1993

REPLY TO  
ATTENTION OF



Dr. Robert Bush  
Executive Director  
Advisory Council on Historic Preservation  
The Old Post Office Building, Suite 809  
1100 Pennsylvania Avenue, N.W.  
Washington, D.C. 20004

Dear Dr. Bush:

Under the terms of the June 7, 1986 Programmatic Memorandum of Agreement (PMOA) for the demolition of World War II Temporary Buildings, as amended on May 5, 1991, the Department of Defense (DoD) was required to undertake various actions to address the effects of the Congressionally mandated demolition of WWII temporary buildings. The enclosed documentation represents the result of work accomplished to meet all PMOA (as amended) stipulations for WWII temporary buildings.

The Historic American Building Survey/Historic American Engineering Record (HABS/HAER) documentation effort associated with the PMOA requirement was extensive. Of the 27,000 World War II temporary buildings in the DoD inventory, a total of 113 different building types were identified and documented in consultation with the HABS/HAER.

This extensive DoD effort has fulfilled the Army's obligations under the PMOA, and has fully addressed the effects of the Congressional order to demolish all WWII temporary buildings. Therefore, the Army will continue with the demolition effort without further restriction and in full compliance with the National Historic Preservation Act of 1966, as amended.

Sincerely,

Lewis D. Walker  
Deputy Assistant Secretary of the Army  
(Environment, Safety and Occupational Health)  
OASA (I, L&E)

Enclosure

CY11150 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM**

---

**From:** Skinner, Harvey Mr CIV USA IMCOM  
**Sent:** Monday, June 13, 2011 3:00 PM  
**To:** Thames, Sara Ms CIV USA IMCOM  
**Cc:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: REC-CY11147 through CY11150 (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

After a review of the narrative contain in REC CY11147 through CY11150 no adverse air quality impacts are expected from the disposal of the buildings provided reasonable precautions to prevent fugitive dust are employed, during both the demolition and subsequent transport to the landfill.

Harvey Skinner  
Environmental Protection Specialist  
DPW/ENRMD/CMB  
1647 23rd Street BLDG. 2516  
Fort Polk, LA 71459-5509  
Comm: 337-531-6026  
Fax: 337-531-8950  
E-mail: [harvey.skinner@us.army.mil](mailto:harvey.skinner@us.army.mil)

CY11150 ENRMD Control Number

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 1:54 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Madison, Raywood T CTR US USA; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Broussard, Nathan G Mr CIV USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Mayes, James W Mr CTR US USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** REC-CY11147

All,

The following REC has been submitted for environmental review:

CY11147 - Disposal of Building 1736..

Project evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars. Thx!

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459

Section: Appendix PP

ENCLOSURE 3

W9126G-12-U-1005-0009

Page 948 of 1082

e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)

office: (337) 531-1653

DSN: 863-1653

fax: (337) 531-2627

Classification: UNCLASSIFIED

Caveats: FOUO

CY11150 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM**

---

**From:** Veillon, Tammy G Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 3:42 PM  
**To:** Thames, Sara Ms CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: REC-CY11150 (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

This REC presents no impact to IAQ.

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 2:00 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Madison, Raywood T CTR US USA; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Broussard, Nathan G Mr CIV USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Mayes, James W Mr CTR US USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** REC-CY11150

All,

The following REC has been submitted for environmental review:

CY11150 - Disposal of Building 1739.

Project evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars. Thx!

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459  
e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)  
office: (337) 531-1653  
DSN: 863-1653  
fax: (337) 531-2627

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11150 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM**

---

**From:** Baker, Christina L CTR US USA  
**Sent:** Monday, June 13, 2011 12:06 PM  
**To:** Thames, Sara Ms CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: RECs-CY11148\_CY11149

In reference to the narrative provided and the environmental parameters selected for RECs CY11148-11150, please ensure that any exposed soil is stabilized through BMPs until vegetative or other stabilization has been achieved to prevent sedimentation into nearby storm conveyances or streams.

Christina Baker, Contractor  
Innovar Environmental Inc.  
DPW-ENRMD  
1647 23rd Street Building 2516  
Fort Polk, LA 71459-5509  
[Christina.baker2@us.army.mil](mailto:Christina.baker2@us.army.mil)  
COMM: 337.531.2894  
DSN: 863.2894  
FAX: 337.531.8950

CY11150 ENRMD Control Number

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 1:55 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Madison, Raywood T CTR US USA; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Broussard, Nathan G Mr CIV USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Mayes, James W Mr CTR US USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** REC-CY11148

All,

The following REC has been submitted for environmental review:

CY11148 - Disposal of Building 1737.

Project evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars. Thx!

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459  
e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)  
office: (337) 531-1653  
DSN: 863-1653  
fax: (337) 531-2627

IMSE-POL-PWE

MEMORANDUM FOR ENRMD, CB

SUBJECT: Report of Finding, Asbestos Inspection of Building 1739 at Fort Polk, Louisiana

1. A focused inspection was conducted on Building 1739 July 22, 2011, for the determination of the presence of asbestos containing building materials (ACBM). Please understand that these results pertain only to that portion of the building for which renovation (work) actions are proposed. The results in this Report of Findings are not necessarily applicable to the remaining spaces in the building. The inspection was performed at the written request of the Environmental and Natural Resources Management Division, Conservation Branch (ENRMD, CB). Inspection results are to be used as part of the Record of Environmental Consideration (REC), ENRMD Control Number CY11150.

2. The focused inspection was performed by Mr. JAMES MAYES Certified Asbestos Inspector (No.1I03189) and a representative of the Fort Polk ENRMD, Compliance Management Branch. The samples were submitted to the ENRMD Laboratory for analysis.

**3. Asbestos Containing Material Was Not Detected**

4. Descriptions and locations of asbestos containing homogeneous areas are listed at Enclosure 1. Number (3) above describes whether ACBM was identified in areas impacted by the scope contained in (REC) CY11150. Sampling locations are identified at Enclosure 2.

5. For further technical information about interpretation of contamination levels and compliance with environmental regulations, contact Sheilla Guzman with the Compliance Management Branch at phone number 531-9128.



SHEILLA GUZMAN  
Environmental Officer

Encl  
as

CY11150 ENRMD Control Number

Building Name: FLAMMABLE MAT. STOR BLDG.  
Description/Use: FIRE STATION #1 FLAMMABLE LOCKER  
Year Constructed: 1947  
Square Feet: 32  
Floors: 1  
Full Survey: Yes  
Certified: No

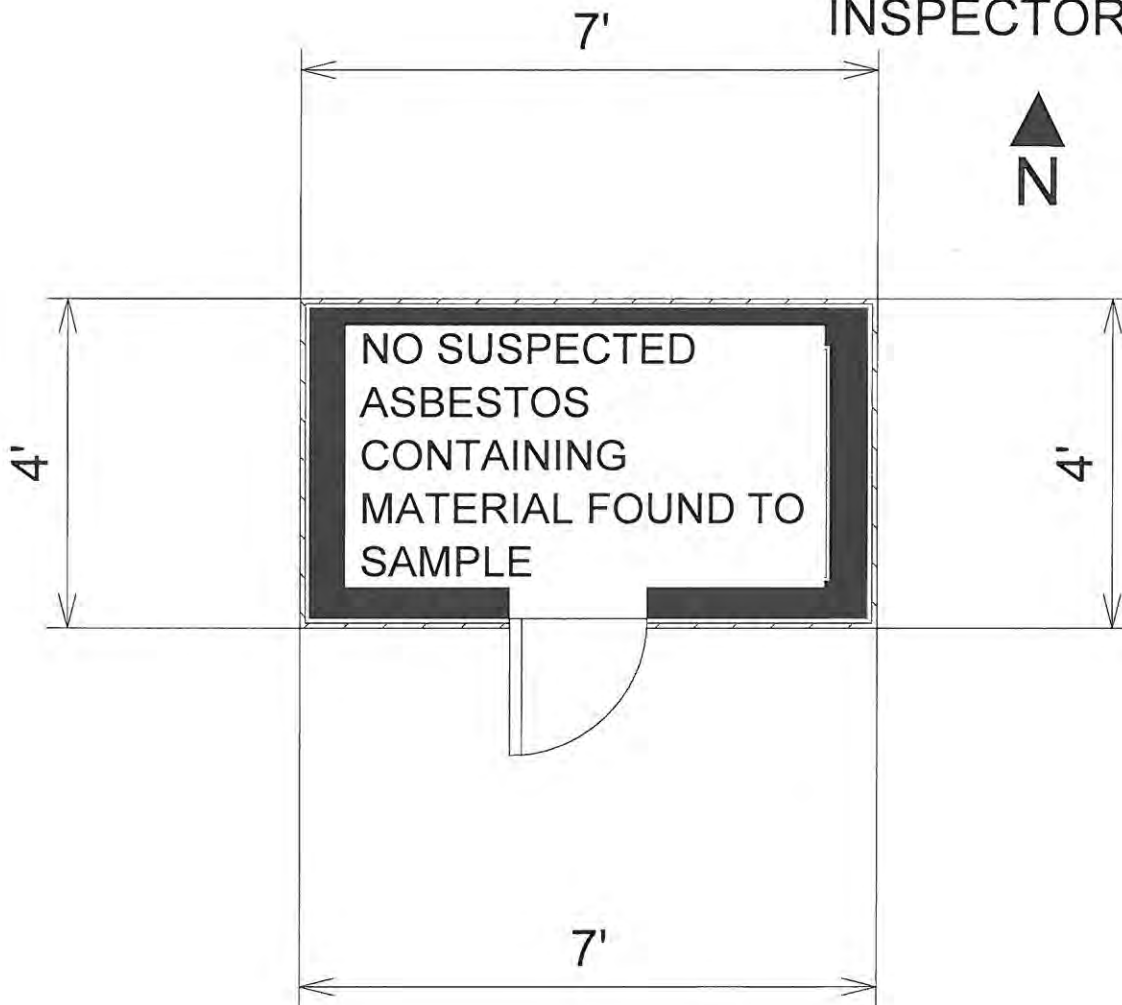
**Table 1**  
**Asbestos Containing Homogeneous Areas**

NO HOMOGENEOUS AREAS WITH POSITIVE SAMPLES TO BE SHOWN FOR THIS BUILDING

ENCLOSURE 6

CY111150 ENRMD Control Number

BUILDING 1739  
DATE: 6-16-2011  
INSPECTION: ASBESTOS  
INSPECTOR: J MAYES





IMSE-POL-PWE

MEMORANDUM FOR ENRMD, CB

SUBJECT: Report of Finding, Lead-Based Paint Inspection of  
Building 1739 Fort Polk, LA

1. An inspection was conducted at Building 1739, on July 22, 2011, for the determination of the presence of any lead-based paint (LBP) hazards. The inspection was performed at the written request of the Environmental and Natural Resources Management Division, Conservation Branch (ENRMD, CB). Inspection results are to be used as part of the Record of Environmental Consideration (REC), ENRMD Control Number CY11150.

2. The inspection was performed by Mr. James Mayes (Certified Lead Inspector No.Pb11I00269), a representative of the Fort Polk ENRMD, Compliance Management Branch. Analysis was conducted using the XRF analyzer.

3. **LEAD WAS NOT DETECTED IN THE PAINT**

4. Descriptions and locations of lead containing homogeneous Areas are listed at Enclosure 1. Number (3) above describes whether LBP was identified in areas impacted by the scope contained in (REC) CY11150. Sampling locations are identified at Enclosure 2.

5. For further technical information about interpretation of contamination levels and compliance with environmental regulations, contact Sheilla Guzman with the Compliance Management Branch at 531-9128



SHEILLA GUZMAN  
Environmental Officer

Encl  
As

CY11150 ENRMD Control Number



Page 2 of 3

La Cert #: PB 11I00269

La Cert #: PB 11I00269

**ENCLOSURE 7**

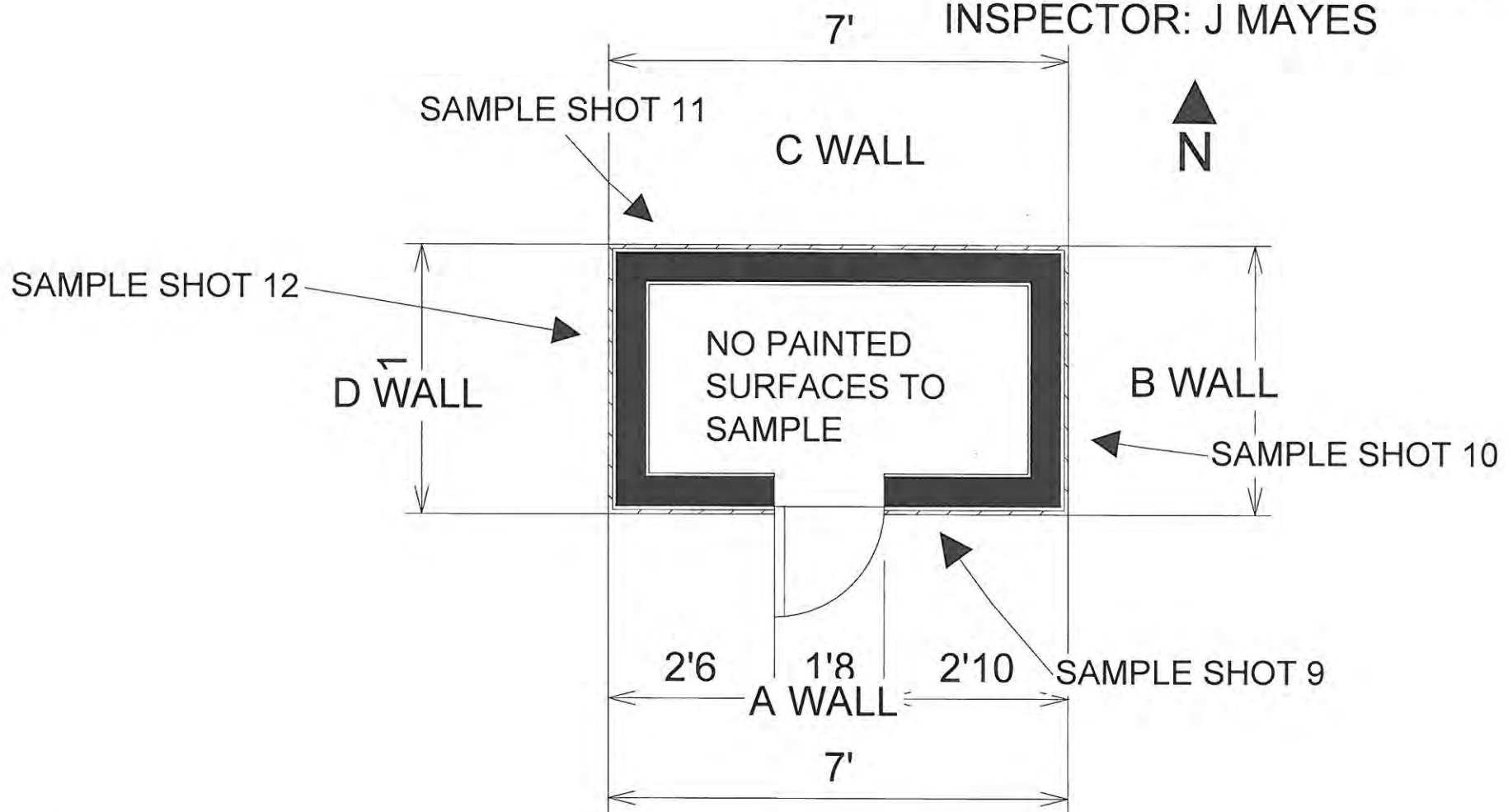
7/15/2011

BUILDING 1739

DATE: 6-16-2011

INSPECTION: LEAD BASED PAINT

INSPECTOR: J MAYES



ENCLOSURE 7

**CEDARS, ALLISON Ms CIV USA IMCOM**

---

**From:** Fitzgerald, Timothy B CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 2:59 PM  
**To:** Blume, Timothy CTR US USA; CEDARS, ALLISON Ms CIV USA IMCOM; Thames, Sara Ms CIV USA IMCOM; Walker, Zachary T CTR US USA

The following Recs require no comment from solid waste, 147-150 provided that they have been cleared for lead and asbestos

Tim Fitzgerald  
Compliance Management Branch  
Environmental and Natural Resources Management Division  
1647 23rd Street Bldg 2516  
Fort Polk, La 71403  
Comm: (337) 531.6029  
FAX: 531.8950  
E-Mail: [timothy.fitzgerald1@us.army.mil](mailto:timothy.fitzgerald1@us.army.mil)

CY11150 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM**

---

**From:** St. Romain, Phil Mr CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 8:38 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

The REC's below are not impacted by SWMU's.

CY11146 - Installation of 1000 Gallon Diesel Fuel Pod for VANTEX Porta Pot Service for Fort Polk and Rotational Units (W91248-10-D-002).

CY11147-11150 are demolition of Fire Station Facilities (1736, 1737, 1738,1739). Attached is copy of RECs.

Phil St. Romain  
Chief, Environmental Compliance Branch  
1647 23rd St., Building 2516  
Fort Polk, Louisiana 71459  
Office: 337-531-0385  
DSN: 863-0385  
Work Cell: 337-208-3058  
FAX: 337-531-8950

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 7:35 AM  
**To:** St. Romain, Phil Mr CIV USA IMCOM; Gibson, Steven S CIV USA IMCOM  
**Subject:** SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

Mr. St. Romain,

Could you please review the following RECs for SWMU Statements?

CY11146 - Installation of 1000 Gallon Diesel Fuel Pod for VANTEX Porta Pot Service for Fort Polk and Rotational Units (W91248-10-D-002).

CY11147-11150 are demolition of Fire Station Facilities (1736, 1737, 1738,1739). Attached is copy of RECs.

Mr. Gibson would the Fire Station Facilities qualify for any QRP opportunities?

Thank you,  
Allison Cedars

CY11150 ENRMD Control Number

Ecologist/NEPA Section

Civilian

DPW, ENRMD, Conservation Branch

1697 23rd Street, Building 2543

Fort Polk, LA 71459

Office: (337) 531-6725

[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED

Caveats: FOUO

Classification: UNCLASSIFIED

Caveats: FOUO

CY11150 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM**

**From:** Lantz, Jacob Mr CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 2:24 PM  
**To:** Thames, Sara Ms CIV USA IMCOM; Galvan, Leonard Mr CIV USA  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** RE: RECs-CY11147-11150 (UNCLASSIFIED)  
**Signed By:** jacob.lantz@us.army.mil

Classification: UNCLASSIFIED

Caveats: FOUO

Use PN# 17220 for all, won't have a WR#. Continue processing, thanks.  
It is a DA1391 to demo the old fire station...

v/r  
Jake  
SRM Program Manager  
DPW, BOID  
531.6889

CY11150 ENRMD Control Number

-----Original Message-----

**From:** Thames, Sara Ms CIV USA IMCOM  
**Sent:** Thursday, June 09, 2011 2:07 PM  
**To:** Lantz, Jacob Mr CIV USA IMCOM; Galvan, Leonard Mr CIV USA  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; CEDARS, ALLISON Ms CIV USA IMCOM; Hartzell, Frederick J CIV USA  
**Subject:** RECs-CY11147-11150

Mr. Lantz/Mr. Galvan,

We received the attached RECs from DPW today (CY11147-Disposal of Bldg 1736; CY11148-Disposal of Bldg 1737; CY11149-Disposal of Bldg 1739; & CY11150-Disposal of Bldg 1739). Unfortunately, Mr. Fred Hartzell is not in today and will not be back to the office or a few days, so the RECs were picked up by someone else. I noticed that none of the RECs have work order numbers/project numbers. We recently received similar RECs for building disposal projects from Mr. Dennis Jackson that contained work order numbers/project numbers, so I wanted to check with you to make sure you are aware of these projects. Let me know if we need to add a work order number/project number to each REC or if they do not need a work order number/project number. Thanks!

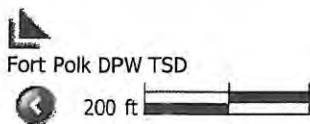
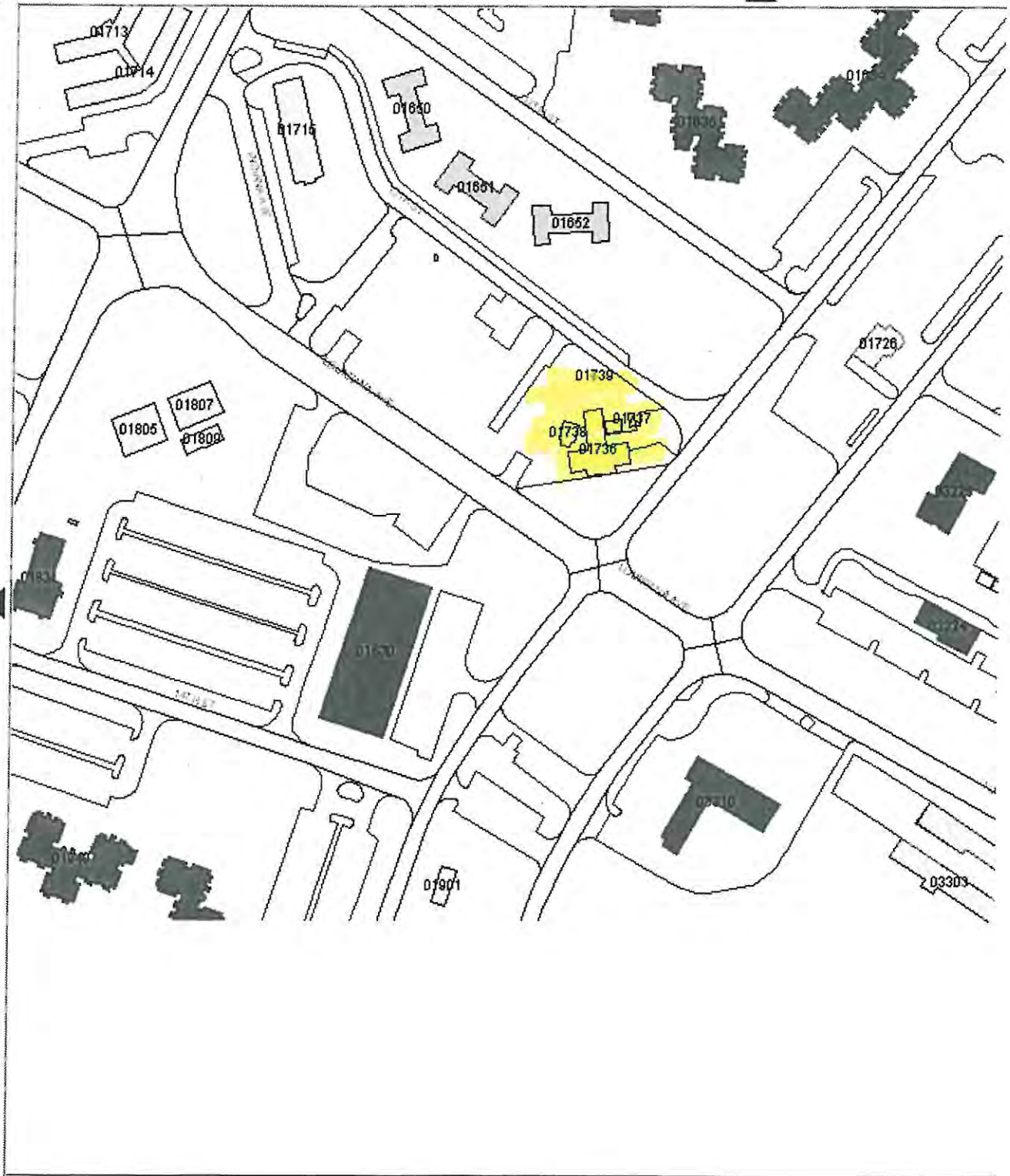
Sara

A. Sara Thames  
Ecologist, DPW/ENRMD/Conservation Branch  
1647 23rd Street, Building 2543  
Fort Polk, Louisiana 71459  
e-mail: [sara.thames@us.army.mil](mailto:sara.thames@us.army.mil)  
office: (337) 531-1653  
DSN: 863-1653

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11150 ENRMD Control Number

CY11150 ENRMD Control Number



Scale 1 : 2398





## BUILDING NO. 1741

AFZX-PW-PS (420-10c)

July 13, 2011

## MEMORANDUM FOR DPW, ENRMD

SUBJECT: Disposal of Building 1741, Fort Polk, LA

1. Request site-specific environmental evaluations for National Environmental Policy Act (NEPA) compliance, Clean Air Act Compliance (Title V) evaluation, asbestos, lead, etc., as applicable for the subject project.
2. Record of Environmental Consideration (REC) is enclosed for your review and concurrence. If your office concurs to the document enclosed, request a copy of the REC with concurrence be returned to this office as soon as possible. The project will be held pending your response.
3. Point of contact is Dennis Jackson, DPW Services Branch, 531-2092

Handwritten signature of Scotty Goins in black ink, with the date "13 JUL 11" written below it.

Scotty Goins  
Chief, Planning Division

Encl

CY11181 ENRMD Control Number

**DEPARTMENT OF THE ARMY  
JOINT READINESS TRAINING CENTER AND FORT POLK  
FORT POLK, LOUISIANA 71459**

**RECORD OF ENVIRONMENTAL CONSIDERATION**

**To: Environmental Office**

**From: DPW Planning Division**

1. **Project Title:** Disposal of Building 1741
2. **Brief Description of Proposed Action:** The Disposal of Building 1741, hauling of debris from sites to an approved landfill and restore site to satisfactory condition.
3. **Project Engineer/ Manager Determination:**

Environmental Parameters	YES	NO
1. Action will require DHH approval of water system changes.		X
2. Action will require DHH approval of wastewater changes.		X
3. Project footprint between 1 and 5 acres (storm water permit).	X	
4. Project footprint greater than 5 acres (storm water permit).		X
5. Action has the potential to disturb asbestos.	X	
6. Action has the potential to disturb lead based paint.	X	
7. Action is new construction (independent of existing structure).		X
8. If number 7 above was yes, were alternatives considered for the new construction.		
9. If number 8 above was yes was the Building Constraints map utilized for development of alternatives.		
10. If number 9 above was yes are the maps for three alternatives included in this Record of Environmental Consideration.		

4. **Purpose and Need:** This Facility will be replace under New Project Construction.
5. **Anticipated Date and/or duration of Proposed Action:** July 2013
6. **A Map is attached:** (Size 8.5" x 11" no greater than 8.5" x 14").
7. **Reason for using record of environmental consideration:** Action is categorically excluded under the provisions of categorical exclusion (CX) C-2 32 CFR 651, Appendix B [and no extraordinary circumstances exist and there are no adverse affects to sensitive resources, as defined in CFR 651.29(b), 651.29(c)] because: (1) See paragraph 8 below (Effects on the Environment), showing that there are no significant environmental impacts; and (2) this proposed action satisfies the screening conditions in 32 CFR 651.29(a), and meets all screening criteria in 32 CFR 651, Appendix B, Section I.
8. **Effects on the Environment:** The proposed action was evaluated by the proponent and an ENRMD Environmental Subject Matter Expert / Evaluator using the following parameters.

Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
Air Quality				Enclosure 3
Indoor Air Quality				Enclosure 4
Storm Water				Enclosure 5
Drinking/Waste Water Systems				Enclosure 5
Cultural Resources			✓	82 09-15-11

CY11181 ENRMD Control Number



Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
Does the property qualify as historical property under the National Historic Preservation Act (NHPA)? <input checked="" type="checkbox"/> no yes (sign name) <u>Bull Ziffert 07-15-11</u> <u>Enclosure 2</u>				
Timber				
Threatened/Endangered Species and Species of Concern				
MBTA				
Sensitive Plants or Bogs				
Wetlands				
Soils/Erosion Control				
Other Natural Resources				
Pest Management				
Noise				
Asbestos				<u>Enclosure 6</u>
Lead -based Paint				<u>Enclosure 7</u>
Solid/ Hazardous Waste				<u>Enclosure 8</u>
Environmental Justice				
Protection of Children				
Environmental Restoration/SWMU				<u>Enclosure 9</u>

CY11181 ENRMD Control Number

**9. Coordination with other agencies and installation departments:**


Installation Organization or Other Agency	Coordination Date	Coordinating Person
Coordination with ESPD/ Master Planning	30 June 2011	Scotty Goins
Coordination with ESPD/ Project Manager	30 June 2011	Shane Gremillion
<u>Polkton Protection Manager</u>		<u>Steve Gibson Enclosure</u>

**10. NEPA Specialist survey report is attached as Appendix A.**

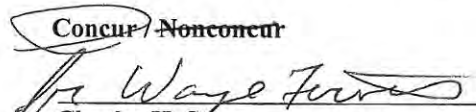
**11. Conclusion:** This proposed action has been evaluated in accordance with 32 CFR Part 651. It has been determined that this proposed action does not individually or cumulatively have significant effects on the human or natural environment. There will be no environmentally controversial changes to existing environmental conditions. There are no circumstances which would require an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). This proposed action: (1) satisfies all screening conditions in 32 CFR 651.29(a); (2) meets all screening criteria in 32 CFR 651, Appendix B, Section I; (3) does not involve any extraordinary circumstances, as defined in 32 CFR 651.29(b), that would preclude the use of a CX; (4) will not adversely affect environmentally sensitive resources as defined in 32 CFR 651.29(c); (5) qualifies for categorical exclusion (CX) number(s) C-2 in accordance with 32 CFR 651, Appendix B, Section II.

**12. Other Environmental Laws:** This document does not relieve the proponent of applicable federal and state laws and regulations.

**Project Proponent**

  
 Name Dennis Jackson  
 Title Reality Specialist  
 Date July 13 2011

**Installation Environmental Coordinator**

Concur ~~Nonconcur~~  
  
 Charles H. Stagg  
 Chief, Environmental and Natural  
 Resources Management Division  
 Directorate of Public Works  
 Date: 8 Aug 2011

**DEPARTMENT OF THE ARMY**  
**JOINT READINESS TRAINING CENTER AND FORT POLK**  
 FORT POLK LOUISIANA 71459  
**ENVIRONMENTAL ANALYSIS/FIELD SURVEY REPORT**  
**Demolition/Disposal of Building 1741**  
**Associated with PN 17220**  
**CY11181**

CY11181 ENRMD Control Number

On June 13, 2011 a field survey was conducted by a NEPA staff member. An inspection of the site location was conducted as a baseline survey to evaluate potential impacts of the proposed action. The proposed actions are to demolish building, haul debris to an authorized landfill, and restore site with compatible material.

The proposed action is covered under categorical exclusion (CX) number C-2, 32 Code of Federal Regulations (CFR) 651 and by the following Environmental Assessment: "*Programmatic EA for Demolition of WWII and Family Housing Buildings at Fort Polk, Louisiana*; January 2001". CX, C-2 states, "Demolition of non-historic buildings, structures, or other improvements and disposal of debris therefrom, or removal of a part thereof for disposal, in accordance with applicable regulations, including those regulations applying to removal of asbestos, polychlorinated biphenyls (PCBs), lead-based paint, and other special hazard items (REC required)". This action meets the criteria for a categorical exclusion in accordance with (CX) number C-2 of 32 CFR Part 651.29, Appendix B, Section I and the proposed action poses no significant impact to the environment or human health. In order for a categorical exclusion to be used as stated in 32 CFR 651, a set of screening criteria must be met. Those screening criteria are listed below.

A CX may be used only when each of the following screening criteria is true:

- The action has NOT been segmented. TRUE
- The action does NOT have a reasonable likelihood of causing significant effects on public health, safety or the environment. TRUE
- This action does NOT cause an imposition of uncertain or unique environmental risks. TRUE
- This action is NOT of greater scope or size than is normal for this category of action. TRUE
- This action is NOT expected to produce reportable releases of hazardous or toxic substances as specified in 40 CFR part 302, Designation, Reportable Quantities, and Notification. TRUE
- This action is NOT expected to produce releases of petroleum, oils, and lubricants (POL) except from a properly functioning engine or vehicle, application of pesticides and herbicides, where the proposed action results in requirement to develop or amend a Spill Prevention, Control, or Counter Measure Plan. TRUE
- There is NO reasonable likelihood of this action violating any federal, state, or local law or requirements imposed for the protection of the environment. TRUE
- This action does NOT involve effects on the environment that are highly uncertain, involve unique or unknown risks, or are scientifically controversial. TRUE
- This action does NOT establish a precedent for future actions that are reasonably likely to have a future significant effect. TRUE
- This action is not expected to potentially degrade an already existing poor environment or effect areas not already significantly modified from their natural condition. TRUE
- This action is NOT expected to produce unresolved effects on (1) Proposed federally listed, threatened, or



endangered species or their designated critical habitats, (2) Properties listed or eligible for listing on the Natural Register of Historic Places, (3) Areas having special designation or recognition such as prime or unique agriculture lands; coastal zones; designated wilderness or wilderness study areas; wild and scenic rivers; National Historic Landmarks; 100-year flood plains; wetlands; sole source aquifers; National Wildlife Refuges; national Parks; areas of critical environmental concern; or other areas of high environmental sensitivity, or (4) Cultural Resources as defined in AR 200-4.

TRUE

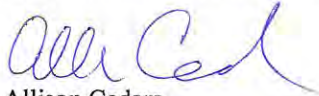
- This is NOT a new Environmental Management System (EMS) Facility –Activity-Task TRUE
- This action does not require new EMS Operational Control (required) TRUE
- This action does not require new EMS competency training TRUE

### Conclusion of Findings

The following actions are covered under the EA, “*Programmatic EA for Demolition of WWII and Family Housing Buildings at Fort Polk, Louisiana*; January 2001”. All buildings are to be disposed in conjunction with Family Reduction Plan. All applicable Installation (dig permit, physical security, safety requirements .....), Federal, and State laws and regulations should be followed. **Please Note: Facility may qualify for the Qualified Recycling Program (QRP), see Enclosure 1. See Enclosure 2 for information regarding Historic Preservation. For specific natural resources of concern such as Air Quality, no significant air quality impacts are expected provided reasonable precautions are taken to prevent dust emissions during demolition or subsequent transport off the Installation. Furthermore, any comfort cooling system that may be associated with the structure must have the refrigerate i.e., Freon, removed per the requirements of 40 CFR Part 82 before disposal (Enclosure 3); Indoor Air Quality, presents no impact to indoor air quality (Enclosure 4); Storm Water, care must be taken to prevent disturbed sediment and other debris from entering the storm drains/storm water conveyance or surface water bodies (Enclosure 5); Drinking Water (Enclosure 5); Asbestos (Enclosure 6); Lead (Enclosure 7); Hazardous/Solid Waste (Enclosure 8); and SWMU (Enclosure 9) a member of the Compliance Branch conducted an evaluation. This report will be attached to the REC as part of the NEPA documentation. If there are no changes in this scope of work or location of the proposed action, no other environmental analysis is planned.** In conclusion the nature of this action poses no significant environmental impacts to the environment. The proposed action meets the screening criteria for the completion of a Record of Environmental Consideration under categorical exclusion C-2 of the 32 CFR 651.



For Additional Information regarding survey, please contact the undersigned below.



Allison Cedars  
Ecologist/NEPA Section  
DPW, ENRMD, Conservation Branch  
1697 23<sup>rd</sup> Street, Building 2543  
Fort Polk, LA 71459  
337-531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

CY11181 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure*

**From:** Gibson, Steven S CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 11:01 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

Allison,

I conducted a recon of the facilities and there are recyclables to be salvaged from the demo operation.

We probably need to figure out how to get this in the demo contract, I can provide the roll off for scrap metal.

Steve

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, June 24, 2011 7:35 AM  
**To:** St. Romain, Phil Mr CIV USA IMCOM; Gibson, Steven S CIV USA IMCOM  
**Subject:** SWMU Statements for RECs and Possible QRP (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

Mr. St. Romain,

Could you please review the following RECs for SWMU Statements?

CY11146 - Installation of 1000 Gallon Diesel Fuel Pod for VANTEX Porta Pot Service for Fort Polk and Rotational Units (W91248-10-D-002).

CY11147-11150 are demolition of Fire Station Facilities (1736, 1737, 1738, 1739). Attached is copy of RECs.

Mr. Gibson would the Fire Station Facilities qualify for any QRP opportunities?

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11181 ENRMD Control Number





Section: Appendix PP

Enclosure 2  
DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
WASHINGTON, DC 20310-0111

November 16, 1993

S12173737222 P:02  
W9126G-12-U-1005-0009

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REPLY TO  
ATTENTION OF

Dr. Robert Bush  
Executive Director  
Advisory Council on Historic Preservation  
The Old Post Office Building, Suite 809  
1100 Pennsylvania Avenue, N.W.  
Washington, D.C. 20004

Dear Dr. Bush:

Under the terms of the June 7, 1986 Programmatic Memorandum of Agreement (PMOA) for the demolition of World War II Temporary Buildings, as amended on May 5, 1991, the Department of Defense (DoD) was required to undertake various actions to address the effects of the Congressionally mandated demolition of WWII temporary buildings. The enclosed documentation represents the result of work accomplished to meet all PMOA (as amended) stipulations for WWII temporary buildings.

The Historic American Building Survey/Historic American Engineering Record (HABS/HAER) documentation effort associated with the PMOA requirement was extensive. Of the 27,000 World War II temporary buildings in the DoD inventory, a total of 113 different building types were identified and documented in consultation with the HABS/HAER.

This extensive DoD effort has fulfilled the Army's obligations under the PMOA, and has fully addressed the effects of the Congressional order to demolish all WWII temporary buildings. Therefore, the Army will continue with the demolition effort without further restriction and in full compliance with the National Historic Preservation Act of 1966, as amended.

Sincerely,

*Lewis D. Walker*

Lewis D. Walker  
Deputy Assistant Secretary of the Army  
(Environment, Safety and Occupational Health)  
OASA (I, L&E)

Enclosure

CY11181 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 3*

**From:** Skinner, Harvey Mr CIV USA IMCOM  
**Sent:** Tuesday, July 19, 2011 2:15 PM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Cc:** Thames, Sara Ms CIV USA IMCOM  
**Subject:** RE: CY11181; Building 1741 (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

After a review of the narrative contained in REC CY11181 no adverse air quality impacts are expected from the project provided fugitive dust control efforts are followed during demolition and off-site removal. In addition, should any air conditioning units (window or split systems) still exist with the building they should be properly evacuated of refrigerants and recycled.

Harvey Skinner  
Environmental Protection Specialist  
DPW/ENRMD/CMB  
1647 23rd Street BLDG. 2516  
Fort Polk, LA 71459-5509  
Comm: 337-531-6026  
Fax: 337-531-8950  
E-mail: [harvey.skinner@us.army.mil](mailto:harvey.skinner@us.army.mil)

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, July 15, 2011 12:02 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; St. Romain, Phil Mr CIV USA IMCOM  
**Cc:** Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
**Subject:** CY11181; Building 1741 (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11181 - Disposal/Demolition of Building 1741 (associated with PN 17220).

Project evaluator Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543

CY11181 ENRMD Control Number

Section: Appendix PP

Fort Polk, LA 71459

Office: (337) 531-6725

[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

W9126G-12-U-1005-0009

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Classification: UNCLASSIFIED

Caveats: FOUO

Classification: UNCLASSIFIED

Caveats: FOUO

CY11181 ENRMD Control Number



*Enclosure 4***CEDARS, ALLISON Ms CIV USA IMCOM**

**From:** Veillon, Tammy G Ms CIV USA IMCOM  
**Sent:** Friday, July 15, 2011 2:32 PM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM; Thames, Sara Ms CIV USA IMCOM  
**Subject:** RE: CY11181; Building 1741 (UNCLASSIFIED)  
**Signed By:** tammy.veillon@us.army.mil

Classification: UNCLASSIFIED

Caveats: FOUO

This REC presents no impact to IAQ.

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, July 15, 2011 2:29 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; St. Romain, Phil Mr CIV USA IMCOM  
**Cc:** Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
**Subject:** CY11181; Building 1741 (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11181 - Disposal/Demolition of Building 1741 (associated with PN 17220).

Project evaluator Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED

Caveats: FOUO

Classification: UNCLASSIFIED

Caveats: FOUO

CY11181 ENRMD Control Number

Classification: UNCLASSIFIED

Caveats: FOUO

*Enclosure 4*

CY11181 ENRMD Control Number



Water ResourcesStorm Water Protection/Permitting

1. **Best Management Practices (BMPs) for construction activity of any size:** Only storm water should enter the storm water conveyances and inlet systems; the installation has a separate storm sewer system that drains directly to receiving streams.
  - a. **Siphoning water from or dumping into the storm sewers or natural water bodies is prohibited.**
  - b. Employ soil erosion measures such as silt fences and inlet protection to prevent sediment from leaving the site and entering the storm drains
2. **Small construction activities (1 Acre to 4.99999 Acres)** will obtain and follow the guidelines mandated in the Storm Water General Permit (#LAR200000).  
[www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR200000.pdf](http://www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR200000.pdf)
3. **Large Construction Activities (5 Acres and over)** will obtain and follow the guidelines mandated in the Storm Water General Permit (#LAR100000).  
[www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR100000.pdf](http://www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR100000.pdf)

Potable/Non-potable Water

1. All **potable water** and **wastewater** taps and tie-ins will require coordination with American Water and may also require DHH approval.
2. **Potable water** will only be collected at either the South Fort Georgia Ave. 2900 block or the North Fort K Avenue point. Collection containers must be labeled "potable water." Contractors must have a backflow prevention device to collect water.
3. Collection of water from an installation **fire hydrant** requires submission of an application to the South Fort Water Plant on Pennsylvania Ave. building 2902.
4. **Non-potable water** can only be collected at the South Fort Water Plant located on Pennsylvania Ave. at building 2902. Contractors must have a backflow prevention device to collect water.
5. Garden hoses are not to be placed in **non-potable** water sources such as radiators, puddles, chemical tanks, cement mixing trucks, pools, etc.
6. The attachment of chemical sprayers to garden hoses is prohibited.
7. New or altered permanent backflow prevention assemblies must be installed in accordance with manufacturer specifications and according to Louisiana Plumbing Codes. Backflow preventers will be tested and certified after installation, modification, or alternation.
8. Report leaking or broken water lines, back siphonage, and backflow prevention/cross-connection issues to the American Water Service Order Desk.
9. All water lines must be removed and/or capped prior to demolition activities; contact American Water for line locates and approval for water/wastewater system modifications.

**Note: For further information concerning taps, tie-ins, back flow prevention installation, and scheduling of fill times, contact American Water @337-531-2036 or 537-1161.**

Water/Monitoring Wells/Geothermal Heat Pumps

1. Contractors shall drill, construct, register, and plug wells and boreholes, and meet the well drilling licensing requirements in accordance with the *Water Well Rules, Regulations, and Standards State of Louisiana* issued by the Department of Transportation and Development Office of Public Works 1985, and the *Construction of Geotechnical Boreholes and Groundwater Monitoring Systems Handbook*, prepared by The Louisiana Department Of Environmental Quality and Louisiana Department Of Transportation And Development, December 2000.
2. Contractors shall only use drilling additives approved by DPW-ENRMD.
3. Contractors will provide DPW-ENRMD a copy of the **Well Registration Short Form (DOTD-GW-1S0)**, **drilling plan, GPS coordinates, and site description for the borehole and/or well.**

4. Contractors shall **notify DPW-ENRMD 24 hours** prior to plugging and abandoning any well and/or borehole, and provide a copy of the **Well Plugging and Abandonment Form (DOTD-GW-2)** upon completion.

**Surface Water Quality (Non-Point Source Run-off)**

Tenants, organizations, contractors, and residents will prevent the discharge or causing the discharge of any pollutant into Fort Polk's surface waters, groundwater, drainage ditches, storm drains, or on the ground.

**Pollutants include, but are not limited to:**

1. Chemicals, detergents, solvents, cleaning agents, POLs, or antifreeze
2. Discharge liquid wastes from field laundries, field showers, field kitchens, sanitary sewers, or water purification systems
3. Pesticides and herbicides where the manufacturer's instructions for application have not been followed
4. Garbage, litter, and universal wastes
5. Erosion and sediments

**For additional information contact:**

**Fred Hartzell  
Engineer Technician, ENRMD  
337-531-1962/337-529-4942**

CY11181 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 5*

**From:** Baker, Christina L CTR US USA  
**Sent:** Tuesday, July 26, 2011 7:58 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: CY11181; Building 1741 (UNCLASSIFIED)  
**Attachments:** WATER REC RESPONSE FINAL.docx

Then I have no further comments aside from the general water resources statement attached.

Christina Baker, Contractor  
Innovar Environmental Inc.  
DPW-ENRMD  
1647 23rd Street Building 2516  
Fort Polk, LA 71459-5509  
[Christina.baker2@us.army.mil](mailto:Christina.baker2@us.army.mil)  
COMM: 337.531.2894  
DSN: 863.2894  
FAX: 337.531.8950

CY11181 ENRMD Control Number

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Thursday, July 21, 2011 8:05 AM  
**To:** Baker, Christina L CTR US USA  
**Subject:** RE: CY11181; Building 1741 (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

They are going to demolish building and haul debris to approved landfill and restore site to satisfactory condition.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

-----Original Message-----

**From:** Baker, Christina L CTR US USA  
**Sent:** Wednesday, July 20, 2011 3:56 PM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: CY11181; Building 1741 (UNCLASSIFIED)

Allison,

Is there description for this REC?

Christina Baker, Contractor  
Innovar Environmental Inc.



DPW-ENRMD

Page 979 of 1082

1647 23rd Street Building 2516

Fort Polk, LA 71459-5509

Christina.baker2@us.army.mil

COMM: 337.531.2894

DSN: 863.2894

FAX: 337.531.8950

*Enclosure 5*

-----Original Message-----

From: CEDARS, ALLISON Ms CIV USA IMCOM

Sent: Friday, July 15, 2011 12:02 PM

To: Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; St. Romain, Phil Mr CIV USA IMCOM  
Cc: Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
Subject: CY11181; Building 1741 (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11181 - Disposal/Demolition of Building 1741 (associated with PN 17220).

Project evaluator Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,

Allison Cedars

Ecologist/NEPA Section

Civilian

DPW, ENRMD, Conservation Branch

1697 23rd Street, Building 2543

Fort Polk, LA 71459

Office: (337) 531-6725

[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED

Caveats: FOUO

Classification: UNCLASSIFIED

Caveats: FOUO

CY11181 ENRMD Control Number

Enclosure 6

IMSE-POL-PWE

MEMORANDUM FOR ENRMD, CB

SUBJECT: Report of Finding, Asbestos Inspection of Building 1741 at Fort Polk, Louisiana

1. A focused inspection was conducted on Building 1741 July 22, 2011, for the determination of the presence of asbestos containing building materials (ACBM). Please understand that these results pertain only to that portion of the building for which renovation (work) actions are proposed. The results in this Report of Findings are not necessarily applicable to the remaining spaces in the building. The inspection was performed at the written request of the Environmental and Natural Resources Management Division, Conservation Branch (ENRMD, CB). Inspection results are to be used as part of the Record of Environmental Consideration (REC), ENRMD Control Number CY11181.

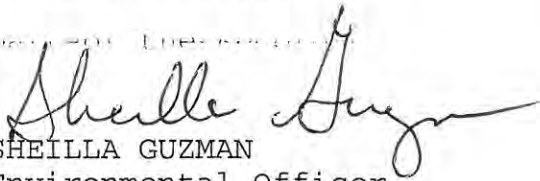
2. The focused inspection was performed by Mr. JAMES MAYES Certified Asbestos Inspector (No.1103189) and a representative of the Fort Polk ENRMD, Compliance Management Branch. The samples were submitted to the ENRMD Laboratory for analysis.

**3. Asbestos Containing Material Was Not Detected**

4. Descriptions and locations of asbestos containing homogeneous areas are listed at Enclosure 1. Number (3) above describes whether ACBM was identified in areas impacted by the scope contained in (REC) CY11181. Sampling locations are identified at Enclosure 2.

5. For further technical information about interpretation of contamination levels and compliance with environmental regulations, contact Sheilla Guzman with the Compliance Management Branch at phone number 531-9128.

Encl  
as

  
SHEILLA GUZMAN  
Environmental Officer

CY11181 ENRMD Control Number

Building Name: WEIGHT ROOM AT FIRE STATION #1  
Description/Use: WORK OUT ROOM  
Year Constructed: 1982  
Square Feet: 289  
Floors: 1  
Full Survey: Yes  
Certified: No

Are there areas that are inaccessible? Yes  
Description of inaccessible area(s): ABOVE CEILING  
Reason Inaccessible: NO ACCESS  
Potential ACMs in inaccessible area(s):  
Estimated quantity of ACMs in inaccessible area(s):

**Table 1**  
**Asbestos Containing Homogeneous Areas**

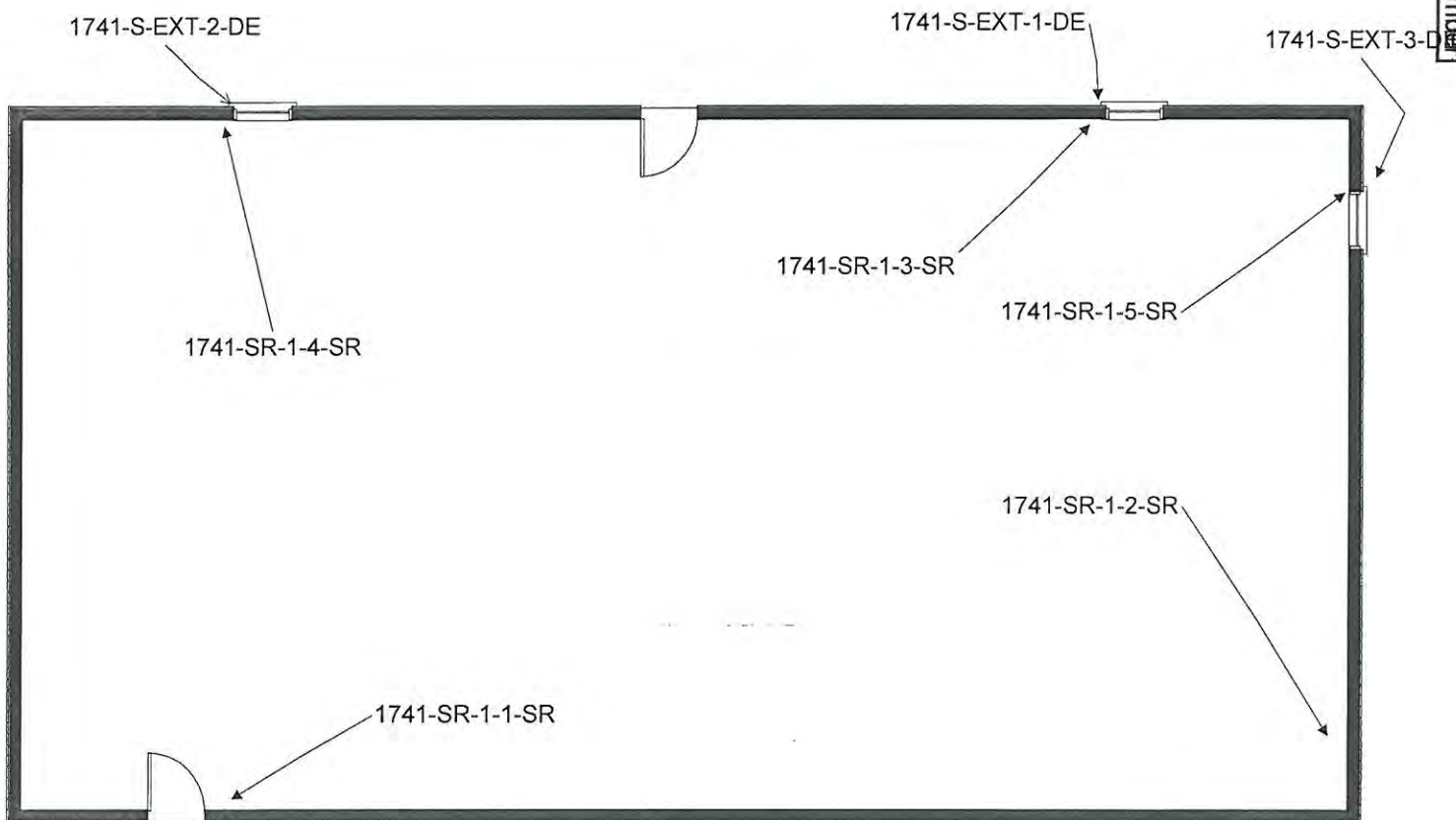
NO HOMOGENEOUS AREAS WITH POSITIVE SAMPLES TO BE SHOWN FOR THIS BUILDING

CY11181

ENRMD Control Number

BUILDING 1741  
DATE: 6-16-2011  
INSPECTION: ASBESTOS  
INSPECTOR: J MAYES

N →





IMSE-POL-PWE

MEMORANDUM FOR ENRMD, CB

SUBJECT: Report of Finding, Lead-Based Paint Inspection of Building 1741 Fort Polk, Louisiana.

1. A focused inspection was conducted at Building 1741 on July 22, 2011, for the determination of the presence of any lead-based paint (LBP) hazards. Please understand that these results pertain only to that portion of the building for which renovation (work) actions are proposed. The results in this Report of Findings are not necessarily applicable to the remaining spaces in the building. The inspection was performed at the written request of the Environmental and Natural Resources Management Division, Conservation Branch (ENRMD, CB). Inspection results are to be used as part of the Record of Environmental Consideration (REC), ENRMD Control Number CY11181.

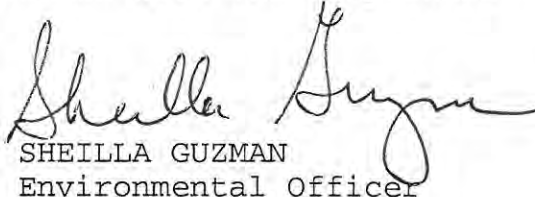
2. The focused inspection was performed by Mr. James Mayes a Certified Lead Inspector (No.Pb11I00269) and a representative of the Fort Polk ENRMD, Compliance Management Branch. Analysis was conducted using the XRF analyzer.

3. **LEAD WAS NOT DETECTED IN THE PAINT**

4. Descriptions and locations of lead containing homogeneous Areas are listed at Enclosure 1. Number (3) above describes whether LBP was identified in areas impacted by the scope contained in (REC) CY11181. Sampling locations are identified at Enclosure 2.

5. For further technical information about interpretation of contamination levels and compliance with environmental regulations, contact Sheilla Guzman with the Compliance Management Branch at 531-9128

Encl  
As

  
SHEILLA GUZMAN  
Environmental Officer

CY11181 ENRMD Control Number

1807

Inspector: James Mayes

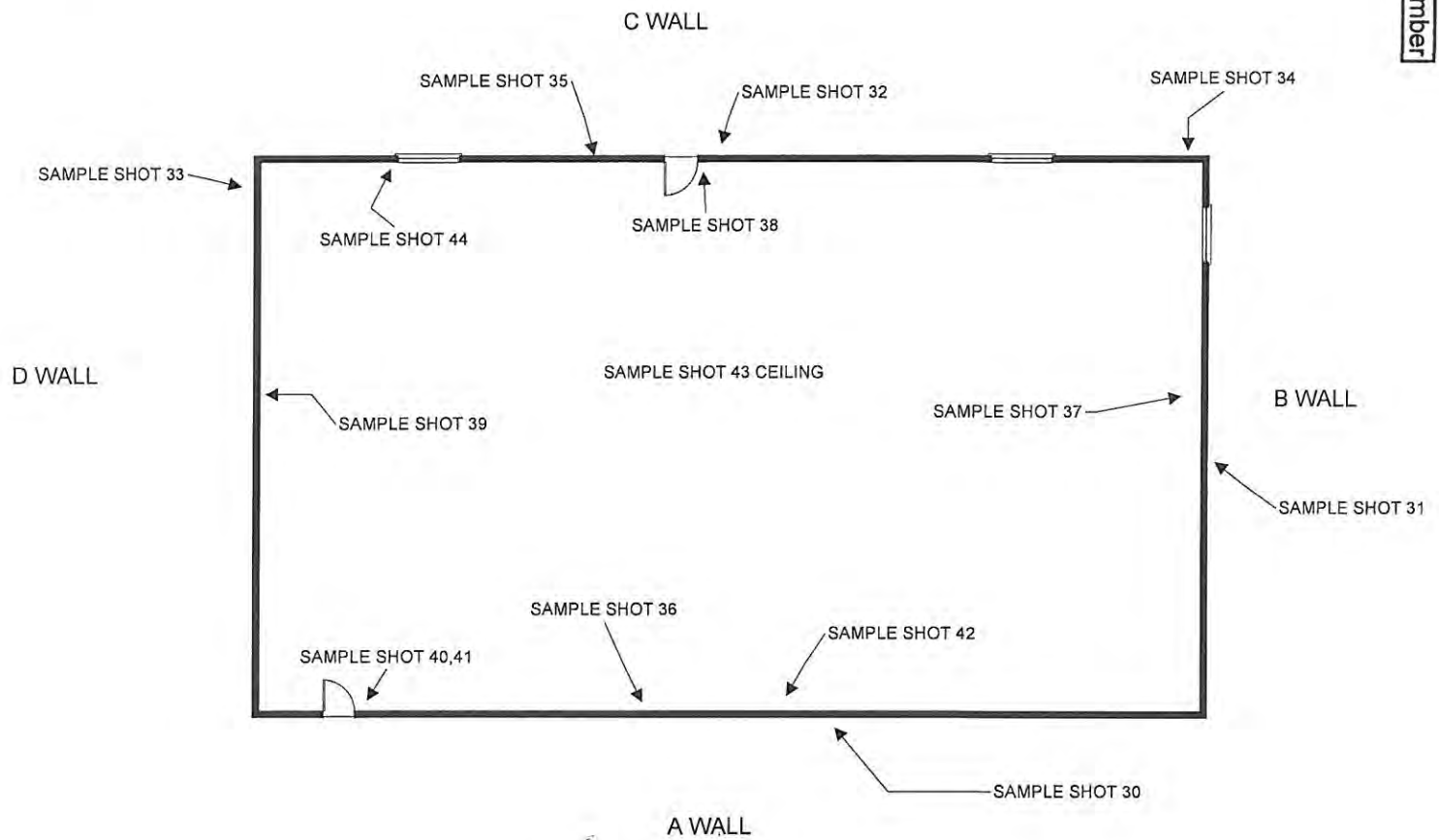
La Cert #: PB 11I00269

Unit # 10

Enclosure 7

BUILDING 1741  
DATE: 6-16-2011  
INSPECTION: LEAD BASED PAINT  
INSPECTOR: J MAYES

N →





**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 8*

**From:** Fitzgerald, Timothy B CIV USA IMCOM  
**Sent:** Friday, July 15, 2011 2:10 PM  
**To:** Blume, Timothy CTR US USA; CEDARS, ALLISON Ms CIV USA IMCOM; Thames, Sara Ms CIV USA IMCOM; Walker, Zachary T CTR US USA

Recs 180-182 require no comment from solid waste.

Tim Fitzgerald  
Compliance Management Branch  
Environmental and Natural Resources Management Division  
1647 23rd Street Bldg 2516  
Fort Polk, La 71403  
Comm: (337) 531.6029  
FAX: 531.8950  
E-Mail: [timothy.fitzgerald1@us.army.mil](mailto:timothy.fitzgerald1@us.army.mil)

CY11181 ENRMD Control Number



**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 9*

**From:** Moltsau, Alan W CIV USA IMCOM  
**Sent:** Monday, July 25, 2011 9:33 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: CY11181; Building 1741 (UNCLASSIFIED)  
**Signed By:** alan.moltsau@us.army.mil

Classification: UNCLASSIFIED  
Caveats: FOUO

No impact to the restoration program

Alan Moltsau  
Hazardous Waste Manager  
DPW/ENRMD/CMB  
1647 SW 23rd Street Bldg 2516  
Fort Polk, LA 71459-5509  
Work Phone: 337-531-4375  
Cell: 337-353-8854  
E-mail: [alan.moltsau@us.army.mil](mailto:alan.moltsau@us.army.mil)

CY11181 ENRMD Control Number

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, July 15, 2011 2:29 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; St. Romain, Phil Mr CIV USA IMCOM  
**Cc:** Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
**Subject:** CY11181; Building 1741 (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11181 - Disposal/Demolition of Building 1741 (associated with PN 17220).

Project evaluator Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725

Section: Appendix PP  
allison.m.cedars@us.army.mil

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Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11181 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 9*

**From:** St. Romain, Phil Mr CIV USA IMCOM  
**Sent:** Friday, July 15, 2011 12:06 PM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: CY11181; Building 1741 (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

SWMU's - no comment

Phil St. Romain  
Chief, Environmental Compliance Branch  
1647 23rd St., Building 2516  
Fort Polk, Louisiana 71459  
Office: 337-531-0385  
DSN: 863-0385  
Work Cell: 337-208-3058  
FAX: 337-531-8950

CY11181 ENRMD Control Number

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, July 15, 2011 12:02 PM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; St. Romain, Phil Mr CIV USA IMCOM  
**Cc:** Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
**Subject:** CY11181; Building 1741 (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11181 - Disposal/Demolition of Building 1741 (associated with PN 17220).

Project evaluator Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543

Section: Appendix PP  
Fort Polk, LA 71459  
Office: (337) 531-6725  
allison.m.cedars@us.army.mil

W9126G-12-U-1005-0009  
Page 990 of 1082

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11181 ENRMD Control Number

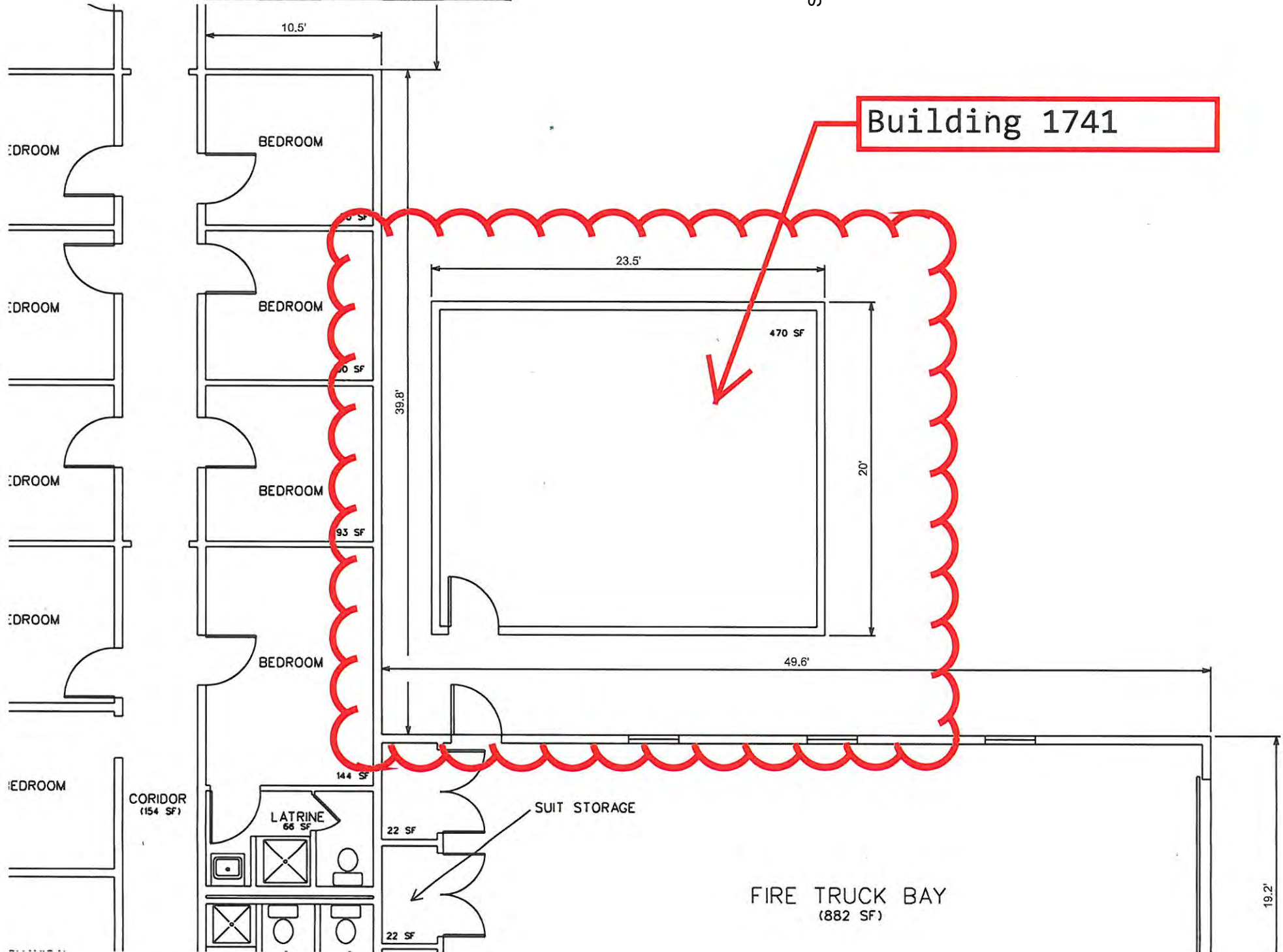




CY11181 ENRMD Control Number

Section:

Building 1741





CY11181 ENRMD Control Number

Section:



1741

## PROPOSED SITE



DEPARTMENT OF THE ARMY  
JOINT READINESS TRAINING CENTER AND FORT POLK  
FORT POLK, LOUISIANA 71459

RECORD OF ENVIRONMENTAL CONSIDERATION

IMSE-POL-PD (420-10c)

August 16, 2011

MEMORANDUM FOR DPW, ENRMD

**SUBJECT: Construction of a Modified Two Company Headquarters Fire Station (PN-17220).**

1. Request site-specific environmental surveys for NEPA compliance as applicable for the project described in the attached document.
2. The Record of Environmental Consideration (REC) is enclosed for your review. Please return a copy of the enclosed REC, along with notation of your concurrence or non-concurrence, to this office.
3. Point of contact is Shane Gremillion, DPW Master Planning Division, 531-4538.

Encl  
REC

  
SCOTTY GOINS  
Chief, Planning Division

CY11219 ENRMD Control Number

**DEPARTMENT OF THE ARMY  
JOINT READINESS TRAINING CENTER AND FORT POLK  
FORT POLK, LOUISIANA 71459**

**RECORD OF ENVIRONMENTAL CONSIDERATION**

**To: Environmental Office**

**From: DPW, Master Planning**

1. **Project Title:** Construction of a Modified Two Company Headquarters Fire Station at the intersection of Louisiana & Mississippi Ave. (Project Number 17220).
2. **Brief Description of Proposed Action:** A permanent facility, approximately 26,705 square foot, will be constructed at the intersection of Louisiana & Mississippi Ave. This facility will require a new entrance off of Mississippi Ave. to service (2) two separate parking lots accommodating 66 POV total parking spaces including 3 handicapped stalls. The facility will require: a new right hand turning lane on Louisiana Ave, a new natural gas generator, a 100' radio tower, grease traps for kitchen, an oil water separator for bay areas, demolition of existing asphalt, pavement, and utilities, grubbing, final grading, soil borings and utility tie-in's which includes but is not exclusive to electrical, water system, wastewater, gas, fiber optics, telephone, etc. The facility will be utilizing both private sector utilities (water/sanitary sewer, electrical) and installations utilities (gas). If the limits of construction are exceeded, the project must stop in order for further environmental analysis to take place and, if necessary, permits to be obtained. The contractor will be required (and this requirement will be placed in Scope of Work) to submit a Notice of Intent and their associated Storm Water Pollution Prevention Plan to the Louisiana Department of Environmental Quality and obtain their approval prior to start of ground disturbance activities. Additionally the contractor will be required to submit water and wastewater designs to Louisiana Department of Health and Hospitals and obtain their concurrence with utility tie-ins prior to ground disturbance activities. Future additions to the Fire Station will require further environmental analysis, adhere to regulatory laws, and any required permits must be acquired prior to additional construction.

**3. Project Engineer/ Manager Determination:**

Environmental Parameters	YES	NO
1. Action will require DHH approval of water system changes.	x	
2. Action will require DHH approval of wastewater changes.	x	
3. Project footprint between 1 and 5 acres (storm water permit).		x
4. Project footprint greater than 5 acres (storm water permit).	x	
5. Action has the potential to disturb asbestos.		x
6. Action has the potential to disturb lead based paint.		x
7. Action is new construction (independent of existing structure).	x	
8. If number 7 (above) was yes, were alternatives considered for the new construction.	x	
9. If number 8 (above) was yes, was the Building Constraints map utilized for development of alternatives.	x	
10. If number 9 (above) was yes, are the maps for three alternatives included in this Record of Environmental Consideration.	x	

4. **Purpose and Need:** Action need to comply with the transition agreement as outlined in the Entergy contract with the Installation.
5. **Anticipated Date and/or duration of Proposed Action:** 30 September 2011
6. **A Map or Map(s) are attached:** Site alternatives are shown below.

CY11219 ENRMD Control Number

7. **Reason for using record of environmental consideration:** Action is categorically excluded under the provisions of categorical exclusion (CX) C-1 32 CFR 651, Appendix B [and no extraordinary circumstances exist and there are no adverse affects to sensitive resources, as defined in CFR 651.29(b), 651.29(c)] because: (1) See paragraph 8 below (Effects on the Environment), showing that there are no significant environmental impacts; and (2) this proposed action satisfies the screening conditions in 32 CFR 651.29(a), and meets all screening criteria in 32 CFR 651, Appendix B, Section I.
8. **Effects on the Environment:** The proposed action was evaluated by the proponent and an ENRMD Environmental Subject Matter Expert / Evaluator using the following parameters.

Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
* Air Quality				Enclosure 5
* Indoor Air Quality				Enclosure 6
* Storm Water				Enclosure 7
* Drinking/Waste Water Systems				Enclosure 7
* Cultural Resources				Enclosure 4
Does the property qualify as historical property under the National Historic Preservation Act (NHPA)? <u>X</u> no yes (sign name) <u>ae</u>				
Timber				
Threatened/Endangered Species and Species of Concern				<u>Bob Davis</u> <u>09 September 2011</u>
MBTA				
* Sensitive Plants or Bogs				Enclosure 3
Wetlands				
Soils/Erosion Control				
Other Natural Resources				
* Pest Management				Enclosure 2
Noise				
* Asbestos				Enclosure 8
* Lead -based Paint				Enclosure 8
* Solid/ Hazardous Waste				Enclosure 9
Environmental Justice				
Protection of Children				
* Environmental Restoration/SWMU				Enclosure 10

9. **Coordination with other agencies and installation departments:**


Installation Organization or Other Agency	Coordination Date	Coordinating Person

10. **NEPA Specialist survey report is attached as Appendix A.**

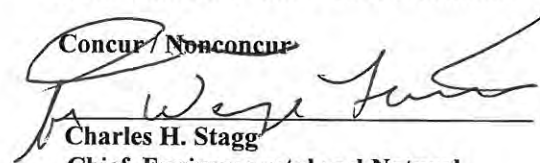
11. **Conclusion:** This proposed action has been evaluated in accordance with 32 CFR Part 651. It has been determined that this proposed action does not individually or cumulatively have significant effects on the human or natural environment. There will be no environmentally controversial changes to existing environmental conditions. There are no circumstances which would require an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). This proposed action: (1) satisfies all screening conditions in 32 CFR 651.29(a); (2) meets all screening criteria in 32 CFR 651, Appendix B, Section I; (3) does not involve any extraordinary circumstances, as defined in 32 CFR 651.29(b), that would preclude the use of a CX; (4) will not adversely affect environmentally sensitive resources as defined in 32 CFR 651.29(c); (5) qualifies for categorical exclusion (CX) number(s) C-1 in accordance with 32 CFR 651, Appendix B, Section II.

12. **Other Environmental Laws:** This document does not relieve the proponent of applicable federal and State laws and regulations.

**Project Proponent**

  
**Name:** Mr. Shane Gremillion  
**Title:** Community Planner  
**Date:** 08-16-2010

**Installation Environmental Coordinator**

~~Concur / Nonconcur~~  
  
**Charles H. Stagg**  
 Chief, Environmental and Natural  
 Resources Management Division  
 Directorate of Public Works  
**Date:** 12 September 2011

CY11219 ENRMD Control Number

**DEPARTMENT OF THE ARMY**  
**JOINT READINESS TRAINING CENTER AND FORT POLK**  
 FORT POLK LOUISIANA 71459  
**ENVIRONMENTAL ANALYSIS/FIELD SURVEY REPORT**  
**Construction of Modified Two Company Headquarters Fire Station**  
**PN17220**  
**CY11219**

CY11219 ENRMD Control Number

On 10 August 2011 field surveys were conducted by a NEPA staff member. Inspections of the site locations were conducted as a baseline survey to evaluate potential impacts of the proposed action. The proposed action is to construct a permanent facility, approximately 27,705 square foot (9.6 acres) to be used as a Two Company Headquarters Fire Station. Other associated projects are for the demolition of Buildings 1736, 1737, 1738, 1739, and 1741. These demolitions are to be covered in separate RECs.

The proposed action is covered under categorical exclusion (CX) number, C-1; 32 Code of Federal Regulations (CFR) 651. CX, C-1 states, "Construction of an addition to an existing structure or new construction on a previously undisturbed site if the area to be disturbed has no more than 5.0 cumulative acres of new surface disturbance. This does not include construction of facilities for the transportation, distribution, use, storage, treatment, and disposal of solid waste, medical waste, and hazardous waste (REC required)". This action meets the criteria for a categorical exclusion in accordance with (CX) number of 32 CFR Part 651.29, Appendix B, Section I and the proposed action poses no significant impact to the environment or human health. In order for a categorical exclusion to be used as stated in 32 CFR 651, a set of screening criteria must be met. Those screening criteria are listed below.

A CX may be used only when each of the following screening criteria is true:

- The action has NOT been segmented. **TRUE**
- The action does NOT have a reasonable likelihood of causing significant effects on public health, safety or the environment. **TRUE**
- This action does NOT cause an imposition of uncertain or unique environmental risks. **TRUE**
- This action is NOT of greater scope or size than is normal for this category of action. **TRUE**
- This action is NOT expected to produce reportable releases of hazardous or toxic substances as specified in 40 CFR part 302, Designation, Reportable Quantities, and Notification. **TRUE**
- This action is NOT expected to produce releases of petroleum, oils, and lubricants (POL) except from a properly functioning engine or vehicle, application of pesticides and herbicides, where the proposed action results in requirement to develop or amend a Spill Prevention, Control, or Counter Measure Plan. **TRUE**
- There is NO reasonable likelihood of this action violating any federal, state, or local law or requirements imposed for the protection of the environment. **TRUE**
- This action does NOT involve effects on the environment that are highly uncertain, involve unique or unknown risks, or are scientifically controversial. **TRUE**
- This action does NOT establish a precedent for future actions that are reasonably likely to have a future significant effect. **TRUE**
- This action is not expected to potentially degrade an already existing poor environment or effect areas not already significantly modified from their natural condition. **TRUE**
- This action is NOT expected to produce unresolved effects on (1) Proposed federally listed, threatened, or endangered species or their designated critical habitats, (2) Properties listed or eligible for listing on the Natural Register of Historic Places, (3) Areas having special designation or recognition such as prime or unique agriculture lands; coastal zones; designated wilderness or wilderness study areas; wild and scenic rivers; National Historic Landmarks; 100-year flood plains; wetlands; sole source aquifers; National



Wildlife Refuges; national Parks; areas of critical environmental concern; or other areas of high environmental sensitivity, or (4) Cultural Resources as defined in AR 200-4.

TRUE

- This is NOT a new Environmental Management System (EMS) Facility –Activity-Task. TRUE
- This action does not require new EMS Operational Control (required). TRUE
- This action does not require new EMS competency training. TRUE

### Field Analysis

This project does qualify for the Sustainable Environmental Monitoring Plan (SEMP) requirements for new construction and therefore alternatives sites were not required for analysis (See Enclosures 1A) but three proposed sites were analyzed.

Site 1: Construction of Two Company Headquarters Fire Station at the intersection of Louisiana and Mississippi Avenues. Facility would require an entrance off Mississippi Avenue to service two separate parking lots. No significant impacts were identified in the site analysis. Action would include partial demolition of Missouri Avenue. Construction on this site would let the Fire Station occupy its current location until the new Station has been constructed. Proposed site is previously disturbed ground. This site has been chosen as the preferred site by the proponent/DPW ENG and has been rated as the environmentally preferred alternative, see tables 1.1 and 1.2 below.



CY11219 ENRMD Control Number



ENRMD CY11219  
Construction of Modified Two Company Headquarters Fire Station (PN 17220).

Friday, September 07, 2012







CY11219 ENRMD Control Number



ENRMD CY11219  
Construction of Modified Two Company Headquarters Fire Station (PN 17220).

Friday, September 07, 2012

CY11219 ENRMD Control Number



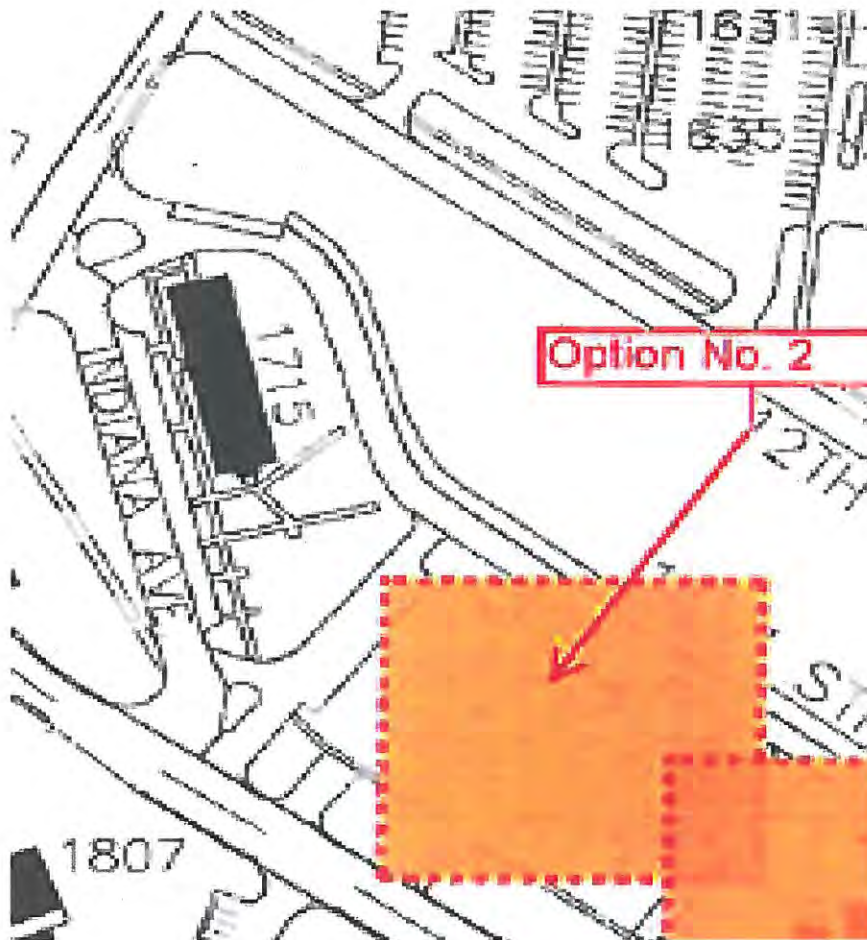
ENRMD CY11219  
Construction of Modified Two Company Headquarters Fire Station (PN 17220).

Friday, September 07, 2012





Site 2. Construction of Two Company Headquarters Fire Station Louisiana Avenue and 13<sup>th</sup> Street. Facility would require an entrance to service two separate parking lots. No significant impacts were identified in the site analysis. In order to construct on this site the fire department would have to move from its current location to a temporary location. Buildings 1736, 1737, 1738, and 1739 would have to be demolished prior to construction preparation work. Proposed site is previously disturbed ground. This site has been chosen as the Second preferred site by the proponent/DPW ENG and has been rated as the Second environmentally preferred alternative, see tables 1.1 and 1.2 below.



CY11219 ENRMD Control Number

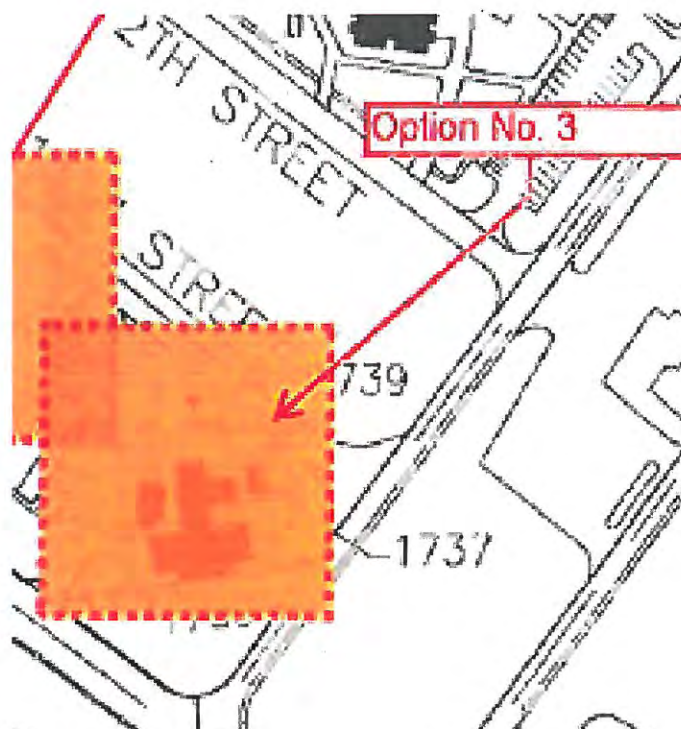


CY11219 ENRMD Control Number





Site 3. Construction of Two Company Headquarters Fire Station Louisiana Avenue and 13<sup>th</sup> Street. Facility would require an entrance to service two separate parking lots. No significant impacts were identified in the site analysis. In order to construct on this site the fire department would have to move from its current location to a temporary location. Buildings 1736, 1737, 1738, and 1739 would have to be demolished prior to construction preparation work. Proposed site is previously disturbed ground. This site has been chosen as the Third preferred site by the proponent/DPW ENG and has been rated as the Third environmentally preferred alternative, see tables 1.1 and 1.2 below.



ENRMD CY11219  
Construction of Modified Two Company Headquarters Fire Station (PN 17220).



CY11219 ENRMD Control Number



ENRMD CY11219  
Construction of Modified Two Company Headquarters Fire Station (PN 17220).

Friday, September 07, 2012



ENRMD CY11219  
Construction of Modified Two Company Headquarters Fire Station (PN 17220).

Friday, September 07, 2012







CY11219 ENRMD Control Number

**Table 1.1 Environmental Evaluation, Construction of Two Company Headquarters Fire Station**

Environmental Parameters	Alternative 1	Alternative 2	Alternative 3
Air Quality	1	1	1
Natural Resources	1	1	1
Biodiversity	-	-	-
Erosion/Slope Stabilization	1	2	2
Previously Disturbed Site	1	1	1
Water/Waste Water Systems	1	1	1
Solid Waste Management Unit	1	1	1
Streams/Wetland	1	1	1
Costs	1	2	2
<b>Total</b>	<b>8</b>	<b>10</b>	<b>10</b>
1= Lowest Impact 2= Medium Impact 3= Greater than Medium but lower than Highest Impact 4= Highest Impact * Additional Emissions to Clear and Grub			

**Table 1.2 Construction of Two Company Headquarters Fire Station**

Parameters	Alternative 1	Alternative 2	Alternative 3
Require Temporary Move	0	-	-
Traffic	-	0	0
DOIM	0	0	0
Sewer/Water	0	0	0
Drinking Water	0	0	0
Force Protection	0	0	0
Electric	0	0	0
Trails	0	0	0
Timber Removal	0	0	0
Future Development	0	0	0
(0) No Impact (-) Negative Impact (+) Positive Impact (*) No Services			

ENRMD CY11219

Construction of Modified Two Company Headquarters Fire Station (PN 17220).



Alternative 1 is Proponents Preferred Alternative. Alternative 1 is the most Environmentally Preferred with Alternatives 2 and 3 ranking the same.

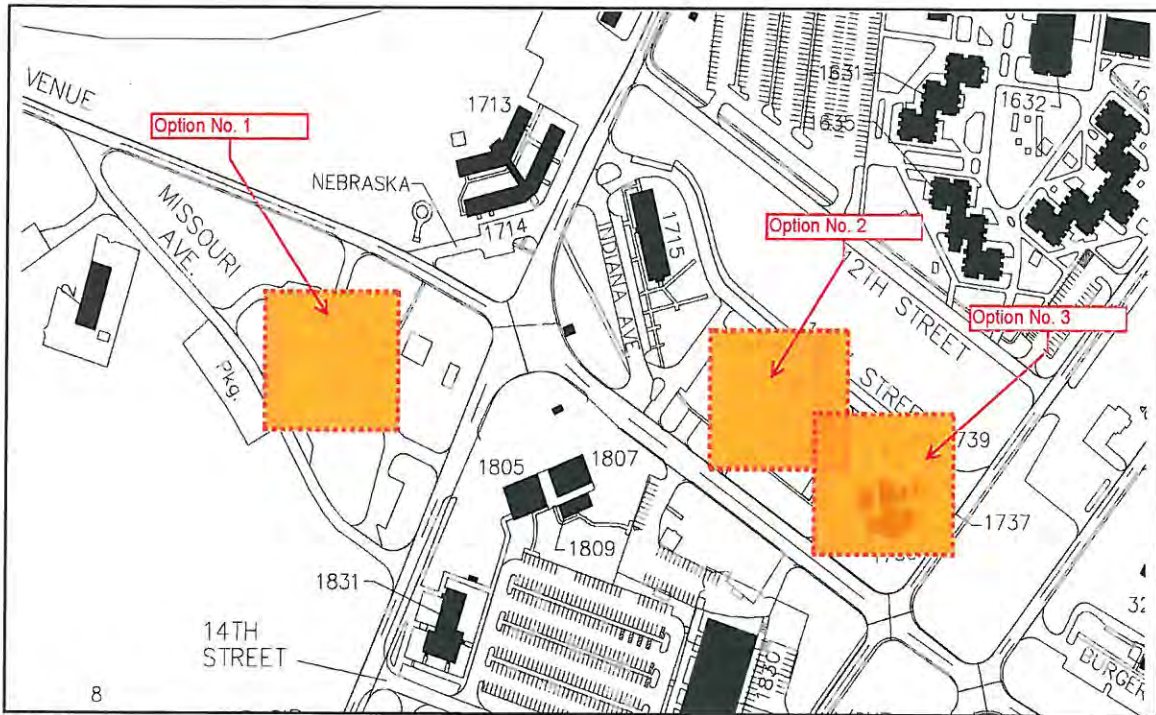
### Conclusion of Findings

The proposed action poses no significant impacts to environment or human health. All applicable Installation (dig permit, physical security, safety requirements, certified electricians, certified plumbers .....), Federal, and State laws and regulations should be followed. **A member of the Conservation Branch Pest Management section conducted an evaluation, should follow Installation Design Guideline (Enclosure 2). A member of the Conservation Branch inspected the three proposed sites and declared that the sites occur in the cantonment area and does not impact any historical landmarks such as champion trees, rare, or sensitive species (Enclosure 3); A member of the Conservation Branch, Cultural Resources evaluated the three proposed sites and found that there is no anticipated impact upon cultural resources, but if human remains are uncovered work shall cease and Fort Polk Cultural Resources must be contacted (Enclosure 4); Members of the Compliance Branch conducted an evaluation for additional resources such as Air Quality, project does have the potential to adversely affect the Installation's Title V permit and other Clean Air Act regulations. The Air Quality Manager must be notified of type and size of generator and type of refrigerant to be used (Enclosure 5); Indoor Air Quality (Enclosure 6); Storm Water, all appropriate water protection and permitting to include best management practices should be implemented (Enclosure 7); Drinking Water, potable/non-potable water regulations and water/monitoring wells/geothermal heat pump regulations should be followed (Enclosure 7); Asbestos and Lead, construction of new facilities require an Asbestos Free Certification at the completion of the project and Paint containing >06% lead is prohibited (Enclosure 8); Hazardous/Solid Waste (Enclosure 9); and SWMU (Enclosure 10). This project does not qualify for the Sustainability and Environmental Monitoring Plan (SEMP) requirements for new construction. Proponent has chosen site 1 as Preferred location. Site 2 was chosen as second choice and Site 3 was chosen as third choice of construction. DPW Engineering and NEPA have also rated that sites as Site 1, Site 2, and Site 3. This report will be attached to the REC as part of the NEPA documentation. If there are no changes in this scope of work or location of the proposed action, no other environmental analysis is planned.** In conclusion the nature of this action poses no significant environmental impacts to the environment. The proposed action meets the screening criteria for the completion of a Record of Environmental Consideration under categorical exclusion C-1 of the 32 CFR 651.

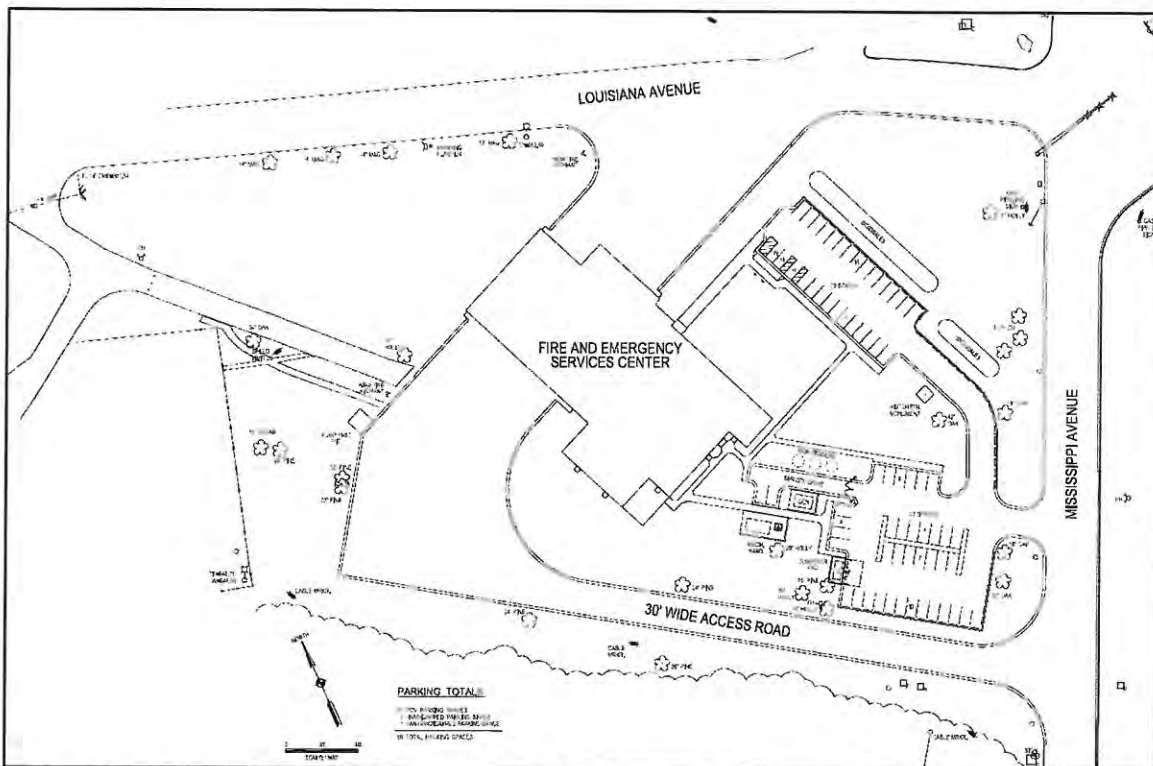


Allison Cedars  
Ecologist/NEPA  
Fort Polk, ENRMD  
337-531-6725  
Fax 337-531-2627  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)





All site options considered are as shown above drawing.



Option # 1 was selected as the preferred site. Total disturbed area is less than 9 acres.

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 1*

**From:** Fariss, Wayne CIV USA IMCOM  
**Sent:** Tuesday, August 23, 2011 10:44 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: SEMP Requirements (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

No, but I would like to see a chart of the differences in the three alternatives before I sign the REC. Even if the alternatives all grade out the same.

Wayne Fariss  
C, Conservation Branch  
e-mail: [wayne.fariss@us.army.mil](mailto:wayne.fariss@us.army.mil)  
(337) 531-7417  
DSN: 863-7417  
CEL: (337)353-5567  
FAX: (337) 531-2627

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Monday, August 22, 2011 11:21 AM  
**To:** Fariss, Wayne CIV USA IMCOM  
**Cc:** Thames, Sara Ms CIV USA IMCOM  
**Subject:** SEMP Requirements (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

Mr. Fariss,

We recently received the following REC, CY11219, for the Construction of Modified Two Company Headquarters Fire Station (PN 17220). This is revised REC from FY08. Project footprint is still in the same proximity as in 08 but has expanded to approximately 9.6 acres, includes partial demolition of Missouri Avenue (bypass off Louisiana Ave) and installation of a communications tower. A Requirements Charrette was held 02-03 August 2011 for the project.

Mr. Gremillion has included in the REC three locations but it has already been decided that option 1 is where the facility is going to be built.

This project does meet SEMP requirements for new construction. As per protocol, would this project qualify for our C-1/SEMP requirements for alternative locations?

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

CY11219 ENRMD Control Number

Classification: UNCLASSIFIED

Caveats: FOUO

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*Enclosure*

Classification: UNCLASSIFIED

Caveats: FOUO

CY11219 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 2*

**From:** Huckaby, Darrell W CIV USA IMCOM  
**Sent:** Friday, August 19, 2011 9:47 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: CY11219, Fire Station (UNCLASSIFIED)  
**Signed By:** darrell.huckaby@us.army.mil

Classification: UNCLASSIFIED  
Caveats: FOUO

ALLISON,

This is fine. No problems.

Darrell W. Huckaby  
Installation Pest Management Coordinator  
DPW, ENRMD, Conservation Branch  
Office - 337-531-1645  
CELL - 337-208-2706  
FAX - 337-531-4864  
E-mail: [darrell.huckaby@us.army.mil](mailto:darrell.huckaby@us.army.mil)

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, August 19, 2011 9:03 AM  
**To:** Huckaby, Darrell W CIV USA IMCOM  
**Cc:** Gremillion, Shane W CIV USA; Thames, Sara Ms CIV USA IMCOM  
**Subject:** RE: CY11219, Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

Mr. Huckaby,

Attached is a copy of the section referring to Pretreatment of Termites on Fort Polk that was submitted in a Draft May 2011 RFP for the project.

Mr. Gremillion,

Does this information remain valid for the project in reference to Pesticides or has new information been developed?

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725

CY11219 ENRMD Control Number

allison.m.cedars@us.army.mil

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*Enclosure 2*

-----Original Message-----

From: Huckaby, Darrell W CIV USA IMCOM  
Sent: Friday, August 19, 2011 8:34 AM  
To: CEDARS, ALLISON Ms CIV USA IMCOM  
Subject: RE: CY11219, Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

Allison,

There is nothing in this REC about Pest Management, therefore I cannot concur. Recommend that Mr. Gremillion provide something about what pesticides they plan to use, etc.. There is a standard blurb that is normally used.

Darrell W. Huckaby  
Installation Pest Management Coordinator DPW, ENRMD, Conservation Branch  
Office - 337-531-1645 CELL - 337-208-2706 FAX - 337-531-4864  
E-mail: darrell.huckaby@us.army.mil

CY11219 ENRMD Control Number

-----Original Message-----

From: CEDARS, ALLISON Ms CIV USA IMCOM  
Sent: Friday, August 19, 2011 8:02 AM  
To: Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Laffitte, Bradley S CTR US USA; Huckaby, Darrell W CIV USA IMCOM; Nicholson, Michael A CIV USA  
Cc: Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
Subject: CY11219, Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11219 - Construction of Modified Two Company Headquarters Fire Station (PN 17220).

Project Evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch



Section: Appendix PP  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
allison.m.cedars@us.army.mil

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Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11219 ENRMD Control Number

## Pretreatment of Termites on Fort Polk

### Pier Foundations

The termiticide of choice for pier foundations is Termador. Use of any other product must be approved by the Installation Pest Management Office.

The footings of each pier will be treated at label rate prior to the pier being installed. Additionally, the soil around the pier will be treated at label rate once back fill dirt is added and prior to completion of project.

### Slab Foundations

The termiticide of choice for pier foundations is Termador. Use of any other product must be approved by the Installation Pest Management Office.

All footings will be treated at label rate prior to footing being poured. The ground will be treated at label rate prior to rebar or plastic being installed. Additionally, the back fill soil will be treated at label rate, after back fill is complete and prior to completion of project.

### Additional Requirements:

1. The Pest Control company performing the treatment must have a Louisiana Commercial Applicators License.
2. The Pest Control company is required to provide the Pest Management Office a photo ID and a copy of the Applicator's license.
3. All termiticides will be mixed onsite.
4. The Pest Control company will provide Pest Management with the following upon completion of each treatment.
  - a. Name of Termiticide
  - b. Lot Number of product
  - c. Total gallons applied
  - d. Total Pounds of Active Ingredients applied

CY11219 ENRMD Control Number

*Enclosure 2***CEDARS, ALLISON Ms CIV USA IMCOM**

**From:** Gremillion, Shane W CIV USA  
**Sent:** Monday, August 22, 2011 10:04 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM; Huckaby, Darrell W CIV USA IMCOM  
**Cc:** Thames, Sara Ms CIV USA IMCOM  
**Subject:** RE: CY11219, Fire Station (UNCLASSIFIED)  
**Attachments:** 2011 RFP.PDF  
**Signed By:** shane.w.gremillion@us.army.mil

Classification: UNCLASSIFIED

Caveats: FOUO

Yes,  
That is the current standing order.

Thanks,

Shane Gremillion

Community Planner  
Directorate of Public Works, Master Planning Division  
6661 Warrior Trail  
Bldg. 350, Suite 229  
Fort Polk, LA 71459-5339  
Ph.# (337) 531-4538  
Fax# (337) 531-8949  
Email: <<mailto:shane.w.gremillion@us.army.mil>>

-----Original Message-----

From: CEDARS, ALLISON Ms CIV USA IMCOM  
Sent: Friday, August 19, 2011 9:03 AM  
To: Huckaby, Darrell W CIV USA IMCOM  
Cc: Gremillion, Shane W CIV USA; Thames, Sara Ms CIV USA IMCOM  
Subject: RE: CY11219, Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

Mr. Huckaby,

Attached is a copy of the section referring to Pretreatment of Termites on Fort Polk that was submitted in a Draft May 2011 RFP for the project.

Mr. Gremillion,

Does this information remain valid for the project in reference to Pesticides or has new information been developed?

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543

CY11219 ENRMD Control Number

Section: Appendix PP  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

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Page 1022 of 1082

*Enclosure 2*

-----Original Message-----

From: Huckaby, Darrell W CIV USA IMCOM  
Sent: Friday, August 19, 2011 8:34 AM  
To: CEDARS, ALLISON Ms CIV USA IMCOM  
Subject: RE: CY11219, Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

Allison,

There is nothing in this REC about Pest Management, therefore I cannot concur. Recommend that Mr. Gremillion provide something about what pesticides they plan to use, etc.. There is a standard blurb that is normally used.

Darrell W. Huckaby  
Installation Pest Management Coordinator DPW, ENRMD, Conservation Branch  
Office - 337-531-1645 CELL - 337-208-2706 FAX - 337-531-4864  
E-mail: [darrell.huckaby@us.army.mil](mailto:darrell.huckaby@us.army.mil)

CY11219 ENRMD Control Number

-----Original Message-----

From: CEDARS, ALLISON Ms CIV USA IMCOM  
Sent: Friday, August 19, 2011 8:02 AM  
To: Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Laffitte, Bradley S CTR US USA; Huckaby, Darrell W CIV USA IMCOM; Nicholson, Michael A CIV USA  
Cc: Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
Subject: CY11219, Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11219 - Construction of Modified Two Company Headquarters Fire Station (PN 17220).

Project Evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section

Section: Appendix PP  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

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Enclosure 2

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11219 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure*

**From:** Allen, Charles M Dr CTR US USA IMCOM  
**Sent:** Monday, August 29, 2011 9:55 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: Input for Construction of Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

I examined the map for the Construction of a Modified Two Company Headquarters Fire Station (PN 17220. There are no records of any rare/sensitive plant species in or near the area and none would be expected in the area. There are no Champion (landmark) trees in the immediate area with the closest champion (landmark) trees located to the west in 5th Mech ID Park and one to the north west of Mississippi Ave and north of Louisiana Ave.

Dr. Charles Allen

-----Original Message-----

From: CEDARS, ALLISON Ms CIV USA IMCOM  
Sent: Friday, August 26, 2011 9:40 AM  
To: Allen, Charles M Dr CTR US USA IMCOM  
Subject: Input for Construction of Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

Dr. Allen,

We recently received a REC for the Construction of a Modified Two Company Headquarters Fire Station (PN 17220).

Project footprint is located within the Missouri Avenue, Mississippi Avenue, and Louisiana Avenue triangle.

Please review REC for any issues regarding plants/champion species.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11219 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 4*

**From:** Laffitte, Bradley S CTR US USA  
**Sent:** Monday, August 22, 2011 10:46 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Cc:** Thames, Sara Ms CIV USA IMCOM  
**Subject:** RE: CY11219, Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

Ms. Cedars,

REC CY11219 will have no anticipated impact to cultural resources. All work shall cease if human remains or an archaeological site is encountered and Fort Polk SOPs will apply.

Bradley Laffitte, Contractor  
Staff Archaeologist  
Environmental Restoration Co.  
DPW-ENRMD  
1647 23rd Street, Fort Polk, LA 71459  
EMAIL: [bradley.laffitte@us.army.mil](mailto:bradley.laffitte@us.army.mil)  
COMM: (337)531-1564  
DSN: 863-1564  
FAX: (337)531-8374

-----Original Message-----

From: CEDARS, ALLISON Ms CIV USA IMCOM  
Sent: Friday, August 19, 2011 8:02 AM  
To: Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Laffitte, Bradley S CTR US USA; Huckaby, Darrell W CIV USA IMCOM; Nicholson, Michael A CIV USA  
Cc: Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
Subject: CY11219, Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11219 - Construction of Modified Two Company Headquarters Fire Station (PN 17220).

Project Evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian

CY11219 ENRMD Control Number



Section: Appendix PP  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

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*Enclosure 4*

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11219 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM**

**From:** Skinner, Harvey Mr CIV USA IMCOM  
**Sent:** Friday, September 09, 2011 9:09 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Cc:** Thames, Sara Ms CIV USA IMCOM  
**Subject:** RE: CY11219, Fire Station (UNCLASSIFIED)  
**Attachments:** EIQ.doc

Classification: UNCLASSIFIED

Caveats: FOUO

After a review of the narrative contained in REC CY11219, the project has the potential to adversely affect the installations Title V permit and other Clean Air Act regulations. The project indicates a natural gas fired generator will be installed. The Air quality Manager must know if the generator will be used only for emergency use. Will the generator be used to provide emergency electrical power? The size of the generator must be known in order to properly estimate the air emissions generated by its operation. Detailed information from the manufacture of the generator will be needed in order to determine if the generator meets air emission standards. The narrative of the REC indicates that approximately 25,000 square feet of building will be constructed. The Air Quality Manager must know the amount of this space that is to be heated and cooled. If natural gas heating is proposed the type and size must be communicated in order to determine the air emissions that can be expected from its operation. The type and size of the comfort cooling of the space must be communicated to the Air Quality Manager, the amount and type i.e. R22, 134a etc and amount of refrigerant in pounds expected to be in the comfort cooling system. Attached is a form to help the proponent capture the needed information.

Harvey Skinner  
Environmental Protection Specialist  
DPW/ENRMD/CMB  
1647 23rd Street BLDG. 2516  
Fort Polk, LA 71459-5509  
Comm: 337-531-6026  
Fax: 337-531-8950  
E-mail: [harvey.skinner@us.army.mil](mailto:harvey.skinner@us.army.mil)

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, August 19, 2011 8:02 AM  
**To:** Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Laffitte, Bradley S CTR US USA; Huckaby, Darrell W CIV USA IMCOM; Nicholson, Michael A CIV USA  
**Cc:** Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
**Subject:** CY11219, Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11219 - Construction of Modified Two Company Headquarters Fire Station (PN 17220).

Project Evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11219 ENRMD Control Number

Enclosure 5

## Proposed Project Emissions Inventory Questionnaire for Air Pollutants (p.2)

**GENERATORS**

- Power Rating: \_\_\_\_\_ kw
- Engine Horsepower: \_\_\_\_\_
- Fuel Type: MOGAS / Diesel / Natural Gas (circle one)
- Integrated Fuel Tank Capacity: \_\_\_\_\_ gallons
- Associated Fuel Tank(s): YES / NO (circle one) Complete Separate Questionnaire for Each Tank
- Percent of Throughput of Pollutants Through This Emission Point:  
Dec-Feb \_\_\_\_\_% Mar-May \_\_\_\_\_% Jun-Aug \_\_\_\_\_% Sep-Nov \_\_\_\_\_%
- Normal Operating Schedule: \_\_\_\_\_ hours/day \_\_\_\_\_ days/week \_\_\_\_\_ weeks/year
- Normal Operating Rate: \_\_\_\_\_ gallons/year

**FUEL STORAGE TANKS**

- Fuel Type: MOGAS / Diesel / JP-8 / Kerosene / Used Oil / Contaminated JP-8 (circle one)
- Tank Type: Aboveground / Underground (circle one)
- Vapor Control Equipped: YES / NO (circle one)
- Tank Volume: \_\_\_\_\_ gallons
- Tank Dimensions: \_\_\_\_\_ Color: \_\_\_\_\_
- Percent of Throughput of Pollutants Through This Emission Point:  
Dec-Feb \_\_\_\_\_% Mar-May \_\_\_\_\_% Jun-Aug \_\_\_\_\_% Sep-Nov \_\_\_\_\_%
- Normal Operating Schedule: \_\_\_\_\_ hours/day \_\_\_\_\_ days/week \_\_\_\_\_ weeks/year
- Normal Operating Rate: \_\_\_\_\_ gallons/year
- Maximum Operating Rate: \_\_\_\_\_ gallons/hour

**SURFACE COATING OPERATIONS**

- Attach MSDS of each coating and solvent
- Particulate Matter Control Efficiency of Booth: \_\_\_\_\_ scfm
- Transfer Efficiency of Paint Gun: \_\_\_\_\_%
- Number of Paint Guns: \_\_\_\_\_
- Associated Heater: YES / NO (circle one) Complete Separate Questionnaire for Each Heater
- Associated Gun Cleaner: YES / NO (circle one) Complete Separate Questionnaire for Each Cleaner
- Percent of Throughput of Pollutants Through This Emission Point:  
Dec-Feb \_\_\_\_\_% Mar-May \_\_\_\_\_% Jun-Aug \_\_\_\_\_% Sep-Nov \_\_\_\_\_%
- Normal Operating Schedule: \_\_\_\_\_ hours/day \_\_\_\_\_ days/week \_\_\_\_\_ weeks/year
- Normal Operating Rate: \_\_\_\_\_ gallons/year (each coating and solvent)

CY11219 ENRMD Control Number

## Proposed Project Emissions Inventory Questionnaire for Air Pollutants

Indicate proposed source type and complete required information.  
Complete separate questionnaire sheet for each proposed source.

Requestor: \_\_\_\_\_ Date: \_\_\_\_\_ Phone: \_\_\_\_\_  
Project # \_\_\_\_\_  
Facility Name / Building Number: \_\_\_\_\_  
Descriptive Name of Equipment: \_\_\_\_\_  
Location of Equipment: UTM Zone 15 Horizontal Coordinate \_\_\_\_\_ E  
Vertical Coordinate \_\_\_\_\_ N

### ENRMD Use Only

Received on \_\_\_\_\_ for submittal in \_\_\_\_\_ Permit  
EPN # \_\_\_\_\_

#### AUTHORIZATION TO PROCEED WITH CHANGE

Authorized by: \_\_\_\_\_ Title: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

#### AUTHORIZATION FOR STARTUP

Authorized by: \_\_\_\_\_ Title: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### DEGREASERS

- Attach MSDS of proposed degreaser solvent
- Degreaser Type: Parts Cleaner / Paint Gun Cleaner (circle one)
- Percent of Throughput of Pollutants Through This Emission Point:  
Dec-Feb \_\_\_\_\_% Mar-May \_\_\_\_\_% Jun-Aug \_\_\_\_\_% Sep-Nov \_\_\_\_\_%
- Normal Operating Schedule: \_\_\_\_\_ hours/day \_\_\_\_\_ days/week \_\_\_\_\_ weeks/year
- Normal Operating Rate: \_\_\_\_\_ gallons/year

### EXTERNAL COMBUSTION UNITS

- Fuel Type: Natural Gas / Boiler Fuel / Diesel (circle one)
- BTU Rating of Equipment: \_\_\_\_\_
- Height of Stack: \_\_\_\_\_
- Diameter of Stack: \_\_\_\_\_
- Percent of Throughput of Pollutants Through This Emission Point:  
Dec-Feb \_\_\_\_\_% Mar-May \_\_\_\_\_% Jun-Aug \_\_\_\_\_% Sep-Nov \_\_\_\_\_%
- Normal Operating Schedule: \_\_\_\_\_ hours/day \_\_\_\_\_ days/week \_\_\_\_\_ weeks/year
- Normal Operating Rate: \_\_\_\_\_ gallons/year

### FUEL DISPENSING UNITS

- Fuel Type: MOGAS / Diesel / JP-8 / Kerosene (circle one)
- Dispensing Type: Retail / Bulk (circle one)
- Vapor Control Equipped : YES / NO (circle one)
- Dispenser Pump Capacity: \_\_\_\_\_ gallons/minute
- Percent of Throughput of Pollutants Through This Emission Point:  
Dec-Feb \_\_\_\_\_% Mar-May \_\_\_\_\_% Jun-Aug \_\_\_\_\_% Sep-Nov \_\_\_\_\_%
- Normal Operating Schedule: \_\_\_\_\_ hours/day \_\_\_\_\_ days/week \_\_\_\_\_ weeks/year
- Normal Operating Rate: \_\_\_\_\_ gallons/year

CY11219 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 6*

**From:** Veillon, Tammy G Ms CIV USA IMCOM  
**Sent:** Monday, August 22, 2011 3:17 PM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: Additional Information regarding CY11219 (UNCLASSIFIED)  
**Signed By:** tammy.veillon@us.army.mil

Classification: UNCLASSIFIED

Caveats: FOUO

I have no additional requirements based on the revisions of this REC.

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, August 19, 2011 9:48 AM  
**To:** Baker, Christina L CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM;  
Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Moltsau, Alan  
W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV  
USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; Thames, Sara Ms CIV USA IMCOM  
**Subject:** Additional Information regarding CY11219 (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

All,

Attached is merged additional information regarding CY11219. A REC in 2008 was submitted for the construction of new Emergency Service Center (PN 17220). Since 2008 project has been revised along with expansion of footprint.

If any of you need a copy of CY08105 to compare please let me know and I will send over a copy.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED

Caveats: FOUO

Classification: UNCLASSIFIED

Caveats: FOUO

CY11219 ENRMD Control Number



Storm Water Protection/Permitting

1. **Best Management Practices (BMPs) for construction activity of any size:** Only storm water should enter the storm water conveyances and inlet systems; the installation has a separate storm sewer system that drains directly to receiving streams.
  - a. **Siphoning water from or dumping into the storm sewers or natural water bodies is prohibited.**
  - b. Employ soil erosion measures such as silt fences and inlet protection to prevent sediment from leaving the site and entering the storm drains
2. **Small construction activities (1 Acre to 4.99999 Acres)** will obtain and follow the guidelines mandated in the Storm Water General Permit (#LAR200000).  
[www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR200000.pdf](http://www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR200000.pdf)
3. **Large Construction Activities (5 Acres and over)** will obtain and follow the guidelines mandated in the Storm Water General Permit (#LAR100000).  
[www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR100000.pdf](http://www.deq.louisiana.gov/portal/Portals/0/permits/lpdes/LAR100000.pdf)

Potable/Non-potable Water

1. All **potable water** and **wastewater** taps and tie-ins will require coordination with American Water and may also require DHH approval.
2. **Potable water** will only be collected at either the South Fort Georgia Ave. 2900 block or the North Fort K Avenue point. Collection containers must be labeled "potable water." Contractors must have a backflow prevention device to collect water.
3. Collection of water from an installation **fire hydrant** requires submission of an application to the South Fort Water Plant on Pennsylvania Ave. building 2902.
4. **Non-potable water** can only be collected at the South Fort Water Plant located on Pennsylvania Ave. at building 2902. Contractors must have a backflow prevention device to collect water.
5. Garden hoses are not to be placed in **non-potable** water sources such as radiators, puddles, chemical tanks, cement mixing trucks, pools, etc.
6. The attachment of chemical sprayers to garden hoses is prohibited.
7. New or altered permanent backflow prevention assemblies must be installed in accordance with manufacturer specifications and according to Louisiana Plumbing Codes. Backflow preventers will be tested and certified after installation, modification, or alternation.
8. Report leaking or broken water lines, back siphonage, and backflow prevention/cross-connection issues to the American Water Service Order Desk.
9. All water lines must be removed and/or capped prior to demolition activities; contact American Water for line locates and approval for water/wastewater system modifications.

**Note:** For further information concerning taps, tie-ins, back flow prevention installation, and scheduling of fill times, contact American Water @337-531-2036 or 537-1161.

Water/Monitoring Wells/Geothermal Heat Pumps

1. Contractors shall drill, construct, register, and plug wells and boreholes, and meet the well drilling licensing requirements in accordance with the *Water Well Rules, Regulations, and Standards State of Louisiana* issued by the Department of Transportation and Development Office of Public Works 1985, and the *Construction of Geotechnical Boreholes and Groundwater Monitoring Systems Handbook*, prepared by The Louisiana Department Of Environmental Quality and Louisiana Department Of Transportation And Development, December 2000.
2. Contractors shall only use drilling additives approved by DPW-ENRMD.
3. Contractors will provide DPW-ENRMD a copy of the **Well Registration Short Form (DOTD-GW-1S0)**, **drilling plan, GPS coordinates, and site description for the borehole and/or well.**



Enclosure 7  
Page 1033 of 1082

4. Contractors shall **notify DPW-ENRMD 24 hours** prior to plugging and abandoning any well, and provide a copy of the **Well Plugging and Abandonment Form (DOTD-GW-2)** upon completion.

**Surface Water Quality (Non-Point Source Run-off)**

Tenants, organizations, contractors, and residents will prevent the discharge or causing the discharge of any pollutant into Fort Polk's surface waters, groundwater, drainage ditches, storm drains, or on the ground.

**Pollutants include, but are not limited to:**

1. Chemicals, detergents, solvents, cleaning agents, POLs, or antifreeze
2. Discharge liquid wastes from field laundries, field showers, field kitchens, sanitary sewers, or water purification systems
3. Pesticides and herbicides where the manufacturer's instructions for application have not been followed
4. Garbage, litter, and universal wastes
5. Erosion and sediments

**For additional information contact:**

**Fred Hartzell**  
**Engineer Technician, ENRMD**  
**337-531-1962/337-529-4942**

CY11219 ENRMD Control Number

**CEDARS, ALLISON Ms CIV USA IMCOM***Enclosure 7*

**From:** Baker, Christina L CTR US USA  
**Sent:** Monday, August 29, 2011 8:15 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM; Thames, Sara Ms CIV USA IMCOM  
**Subject:** RE: Additional Information regarding CY11219 (UNCLASSIFIED)  
**Attachments:** WATER REC RESPONSE FINAL.docx

Please see the attached water resources comments in reference to the narrative provided and the environmental parameters selected for REC CY11219.

Christina Baker, Contractor  
Innovar Environmental Inc.  
DPW-ENRMD  
1647 23rd Street Building 2516  
Fort Polk, LA 71459-5509  
[Christina.baker2@us.army.mil](mailto:Christina.baker2@us.army.mil)  
COMM: 337.531.2894  
DSN: 863.2894  
FAX: 337.531.8950

CY11219 ENRMD Control Number

-----Original Message-----

**From:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Sent:** Friday, August 19, 2011 9:48 AM  
**To:** Baker, Christina L CTR US USA; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM  
**Cc:** Hoyt, Elizabeth J Mrs CIV USA IMCOM; Thames, Sara Ms CIV USA IMCOM  
**Subject:** Additional Information regarding CY11219 (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

All,

Attached is merged additional information regarding CY11219. A REC in 2008 was submitted for the construction of new Emergency Service Center (PN 17220). Since 2008 project has been revised along with expansion of footprint.

If any of you need a copy of CY08105 to compare please let me know and I will send over a copy.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED  
Caveats: FOUO

Enclosure B

IMSE-POL-PWE

19 August 2011

MEMORANDUM FOR ENRMD, Conservation Branch (Attn: NEPA Staff)

Construction of Modified Two Company Headquarters Fire Station, CY11219.

1. Reviewed the proposed scope, Construction of Modified Two Company Headquarters Fire Station. There is no demolition associated with this project as originally stated in the REC.
2. Construction of new facilities requires an Asbestos Free Certification at the completion of the project. Paint containing > .06% lead is prohibited.
3. Point of contact is the undersigned at (337) 531-9128, or Sheilla.guzman@us.army.mil

Sheilla Guzman

CY11219 ENRMD Control Number

Friday, September 07, 2012

**CEDARS, ALLISON Ms CIV USA IMCOM**

---

**From:** Guzman, Sheilla CIV USA IMCOM  
**Sent:** Friday, August 19, 2011 10:35 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM; Thames, Sara Ms CIV USA IMCOM  
**Subject:** New Construction REC Memorandum 11-219.docx (UNCLASSIFIED)  
**Attachments:** New Construction REC Memorandum 11-219.docx

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11219 ENRMD Control Number

*Enclosure 9***CEDARS, ALLISON Ms CIV USA IMCOM**

**From:** Fitzgerald, Timothy B CIV USA IMCOM  
**Sent:** Friday, August 19, 2011 8:28 AM  
**To:** Blume, Timothy CTR US USA; CEDARS, ALLISON Ms CIV USA IMCOM; Thames, Sara Ms CIV USA IMCOM; Walker, Zachary T CTR US USA  
**Subject:** RE: CY11221, Grease Rack 3817 (UNCLASSIFIED)

No comments are required from solid waste for Recs 216-221

Tim Fitzgerald  
Compliance Management Branch  
Environmental and Natural Resources Management Division  
1647 23rd Street Bldg 2516  
Fort Polk, La 71403  
Comm: (337) 531.6029  
FAX: 531.8950  
E-Mail: [timothy.fitzgerald1@us.army.mil](mailto:timothy.fitzgerald1@us.army.mil)

-----Original Message-----

From: CEDARS, ALLISON Ms CIV USA IMCOM  
Sent: Friday, August 19, 2011 8:12 AM  
To: Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Gibson, Steven S CIV USA IMCOM  
Cc: Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
Subject: CY11221, Grease Rack 3817 (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11221 - Demolition of Grease Rack 3817 at HHC 46th ENG Motor Pool.

Project evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

Classification: UNCLASSIFIED  
Caveats: FOUO

**CEDARS, ALLISON Ms CIV USA IMCOM**

**From:** Moltsau, Alan W CIV USA IMCOM  
**Sent:** Friday, August 19, 2011 9:23 AM  
**To:** CEDARS, ALLISON Ms CIV USA IMCOM  
**Subject:** RE: CY11219, Fire Station (UNCLASSIFIED)  
**Signed By:** alan.moltsau@us.army.mil

Classification: UNCLASSIFIED

Caveats: FOUO

No know restoration issues with this project

Alan Moltsau  
Hazardous Waste Manager  
DPW/ENRMD/CMB  
1647 SW 23rd Street Bldg 2516  
Fort Polk, LA 71459-5509  
Work Phone: 337-531-4375  
Cell: 337-353-8854  
E-mail: [alan.moltsau@us.army.mil](mailto:alan.moltsau@us.army.mil)

CY11219 ENRMD Control Number

-----Original Message-----

From: CEDARS, ALLISON Ms CIV USA IMCOM  
Sent: Friday, August 19, 2011 8:02 AM  
To: Baker, Christina L CTR US USA; Brewer, Kathleen B CTR US USA; Broussard, Nathan G Mr CIV USA IMCOM; Fitzgerald, Timothy B CIV USA IMCOM; Guzman, Sheilla CIV USA IMCOM; Hartzell, Frederick J CIV USA; Madison, Raywood T CTR US USA; Mayes, James W Mr CTR US USA IMCOM; Moltsau, Alan W CIV USA IMCOM; Moore, Joseph W Mr CIV USA IMCOM; Skinner, Harvey Mr CIV USA IMCOM; Veillon, Tammy G Ms CIV USA IMCOM; Laffitte, Bradley S CTR US USA; Huckaby, Darrell W CIV USA IMCOM; Nicholson, Michael A CIV USA  
Cc: Thames, Sara Ms CIV USA IMCOM; Hoyt, Elizabeth J Mrs CIV USA IMCOM  
Subject: CY11219, Fire Station (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

All,

The following REC has been submitted for environmental review:

CY11219 - Construction of Modified Two Company Headquarters Fire Station (PN 17220).

Project Evaluator is Allison Cedars, 531-6725.

Please submit all comments/responses to Sara Thames and Allison Cedars.

Thank you,  
Allison Cedars  
Ecologist/NEPA Section  
Civilian  
DPW, ENRMD, Conservation Branch  
1697 23rd Street, Building 2543

Section: Appendix PP  
Fort Polk, LA 71459  
Office: (337) 531-6725  
[allison.m.cedars@us.army.mil](mailto:allison.m.cedars@us.army.mil)

W9126G-12-U-1005-0009

Page 1039 of 1082

*Enclosure 10*

Classification: UNCLASSIFIED  
Caveats: FOUO

Classification: UNCLASSIFIED  
Caveats: FOUO

CY11219 ENRMD Control Number



## TCLP CALCULATIONS

Building Demolition  
Fire Station Buildings  
Contract Buildings TCLP-Lead

[illegible]

\* No Pb based on XRF readings

## APPENDIX QQ

### WAIVER TO STANDARD DESIGN FOR TWO COMPANY FIRE STATION

REPLY TO  
ATTENTION OFDEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS  
WASHINGTON, D.C. 20314-1000

MAY 24 2010

CEMP-IS

## MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: FY12 PN 17220, Ft. Polk Fire Station - Waiver to the Standard Design for a Two-Company Headquarters

## 1. Reference.

a. Memorandum, CESWD-PDM, subject: MILCON Business Process (MBP) Waiver Request dated 20 Apr 10.

2. Reference 1a requests the construction of a modified Two-Company Headquarters Fire Station in lieu of the standard design. The request has been concurred with by Huntsville Center of Standardization (COS) for the Fire Station standard design and endorsed by the Installation. The proposed Fire Station will comply with the Army standards, but has a larger square footage to support Fort Polk's requirements based upon their TDA. This requested modification will not affect execution or Army Standards for Fire Stations.

3. The construction of a modified Two-Company Headquarters Fire Station for PN 17220 is approved.

4. Point of contact is Ana Ortega, CEMP-IS, (817) 886-1774.

FOR THE COMMANDER:

  
JEFFREY J. DORKO

Major General, USA

Deputy Commander General

for Military and International Operations

## DISTRIBUTION:

CESWD-PDM

CEHNC-ISP

## CF:

CESWD-PDM (Mr. Mithwani)

CEHNC-ISP (Mr. Bezilla)

CEMP-IS (Ms. Ortega)

CECW-CE (Mr. Wick)

CEMP-SWD (Mr. Hanson)

CESWF-EC-AM

APR 01 2010

MEMORANDUM FOR CEMP-CESWD Mr. Adam Crisp

SUBJECT: MILCON Transformation (MT) Waiver Request

1. The U. S. Army District, Fort Worth, requests the following MT Waiver(s) for FY12 PN 017220, *Fire Station*, Ft. Polk:

- X      Waiver to Standard Design  
          Waiver to Use of COS Contracts  
          Other Waiver Request

Specify \_\_\_\_\_

(Check all that apply)

2. The following facility types are included as part of this waiver:

CAT Code	Description
73010	Fire Station – 2 Company

3. The programmed size of 26,705 SF is modified from the CoS standard design for a two-company headquarters fire station (see Encl 1). The Ft. Polk Fire Department has a larger compliment of fire fighters and instructors than the standard design can accommodate. In Spring of 2009, as part of a planning charrette, the CoS, Ft. Polk DPW, Ft. Polk FD, and CESWF collaborated to develop a design of fire station that will accommodate the FPPD personnel requirements. The CoS developed this modified floor plan based on the TDA for the FPPD. The modified floor plan includes all Army Standards for fire station and all CoS standard design features for fire stations (See encl. 2 for standard design). The modified floor plan includes more dormitory rooms for the extra fire fighters and extra office space for the extra inspectors assigned to the FPPD. The CoS will issue this as a design-build construction contract. This modification will not affect execution nor Army standards for fire stations.

4. The PDT will issue a 2 phase solicitation, single award design-build construction contract to acquire construction services (also known as a "C" type contract). The contracting office of the Center of Standardization (CoS) for fire stations, CEHNC-CT-A, will be responsible for solicitation and award of the contract. The CoS does not have a Multiple Award Task Order Contract (MATOC) for fire stations. CEHNC-CT-A has designated this project for a service disabled veteran owned set aside.

5. The CoS concurs with the modified course of action. See enclosure 1 for the formal CoS position statement. Also, the CoS validated the scope in the PAX database as part of the Parametric Design (Code 3/ENG Form 3086) process.

CESWF-EC-AM

SUBJECT: MILCON Transformation (MT) Waiver Request

6. The points of contact for this action are:

Mr. W. Mike Guldemon, (817) 886-1671. Project Manager, CESWF-EC-AM


Mr. Brian Bezilla, (256) 895-1973. CoS Project Coordinator, CEHNC-ISP.

3 Encls

1. COS Position Statement
2. Drawing. Modified Two Company Headquarters Fire Station, Fort Polk, LA
3. Drawing. Floor Plan. Two Company Headquarters Fire Station.

CF:

Ft. Polk



ROBERT P. MORRIS, JR. P.E.  
Deputy District Engineer for  
Programs and Project Management

**SUBJECT: COS Position Statement**

1. Huntsville Center COS provides the following information for FY12 PN 17220, Fire Station, Fort Polk, LA:

- |                                     |                                |                                      |
|-------------------------------------|--------------------------------|--------------------------------------|
| <input type="checkbox"/>            | Waiver to Army Standard        | Complete/attach Checklist 1          |
| <input checked="" type="checkbox"/> | Waiver to Standard Design      | Complete/attach Checklist 1          |
| <input type="checkbox"/>            | Waiver to Use of COS Contracts | Complete/attach Checklist 2          |
| <input type="checkbox"/>            | Other Waiver Request           | Use Checklist Factors as appropriate |
|                                     | Specify                        |                                      |

2. The following facility types are included as part of this waiver:

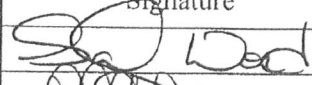
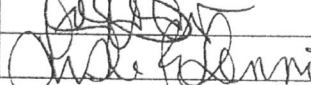
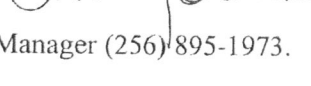
<b>CAT Code</b>	<b>Description</b>	<b>Size or # of Personnel Supported</b>
73010	Fire Station – 2 Company	26,705 sf requested

3. Brief Summary of COS Position:

The installation has a larger complement of fire fighters, training officers and instructors than can be accommodated by the standard design. The modified plan complies with all Army Standards for fire stations and all COS design features, but has a larger square footage than the standard design to support Fort Polk's personnel requirements based upon their TDA.

COS Position: Concur or Nonconcur **COS Concurs**

4. COS Configuration Control Board:

	Name	Signature
Technical Member	Sandy Wood	
PM Member	George Foozer	
Contracting Member	Lisle Lennon	

5. COS Primary POC and Phone # : Brian Bezilla, Project Manager (256) 895-1973.



COS Position Statement: Checklist 1 for Army Standard/Standard Design

1. Is this request related to project site area constraints? Yes / No  
If so, describe.

2. Discuss all functions and spatial relationships and/or operational requirements of the Army Standard(s) that will be altered or omitted by this request.

a. Describe mandatory Army Standard (AS)/ Standard Design (SD) functional relationships that will be impacted

*None; functional relationships maintained by modified design.*

b. Describe any mission critical AS/SD functions impacted by the proposal.

*None; mission critical functions maintained by modified design.*

c. Discuss all technical features of the AS/SD that will be altered or omitted by this request.

*The modified floor plan includes 5 more dormitory rooms for the extra firefighters assigned to Fort Polk FD. Standard room layouts and adjacencies are preserved.*

*The office space for instructors is larger in square footage than the standard design. The standard design supports one training officer and Fort Polk FS has two instructors assigned per their TDA.*

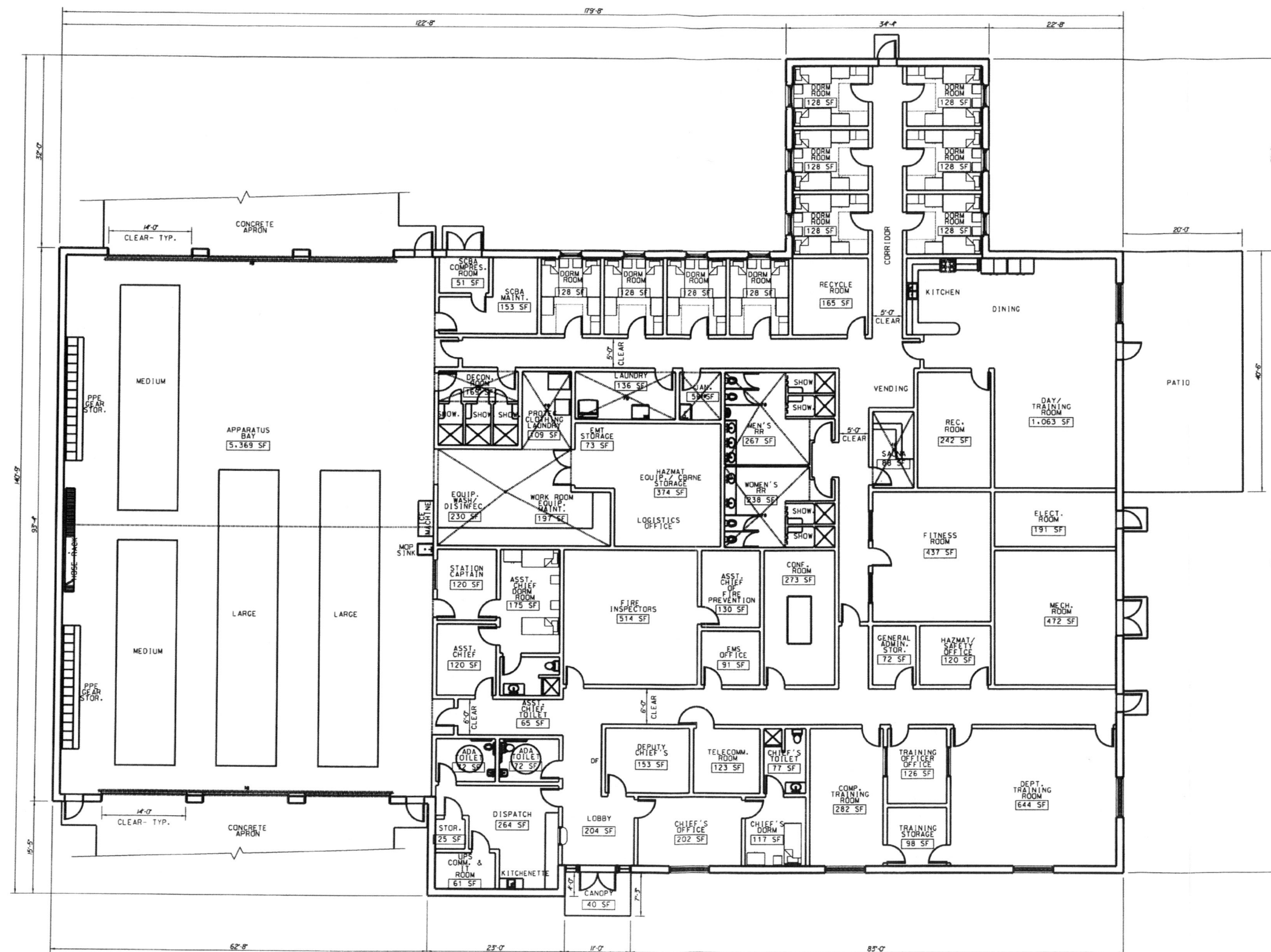
*The fire inspector's office is larger in square footage than the standard design to support two additional inspectors at Fort Polk FS based on their TDA.*

*The department training room, dayroom/training room, electrical and mechanical spaces are larger in square footage than the standard design to help preserve required adjacencies.*

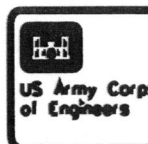
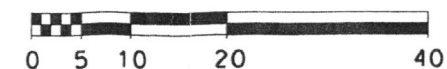
3. Other Pertinent Information/Impacts to be considered (i.e. time, cost, etc.).

*None*

## Section:



1 FLOOR PLAN  
TWO COMPANY HEADQUARTERS FIRE STATION  
A6-HO SCALE: 1' - 0" = 1/8" 19,331 SQ. FT.


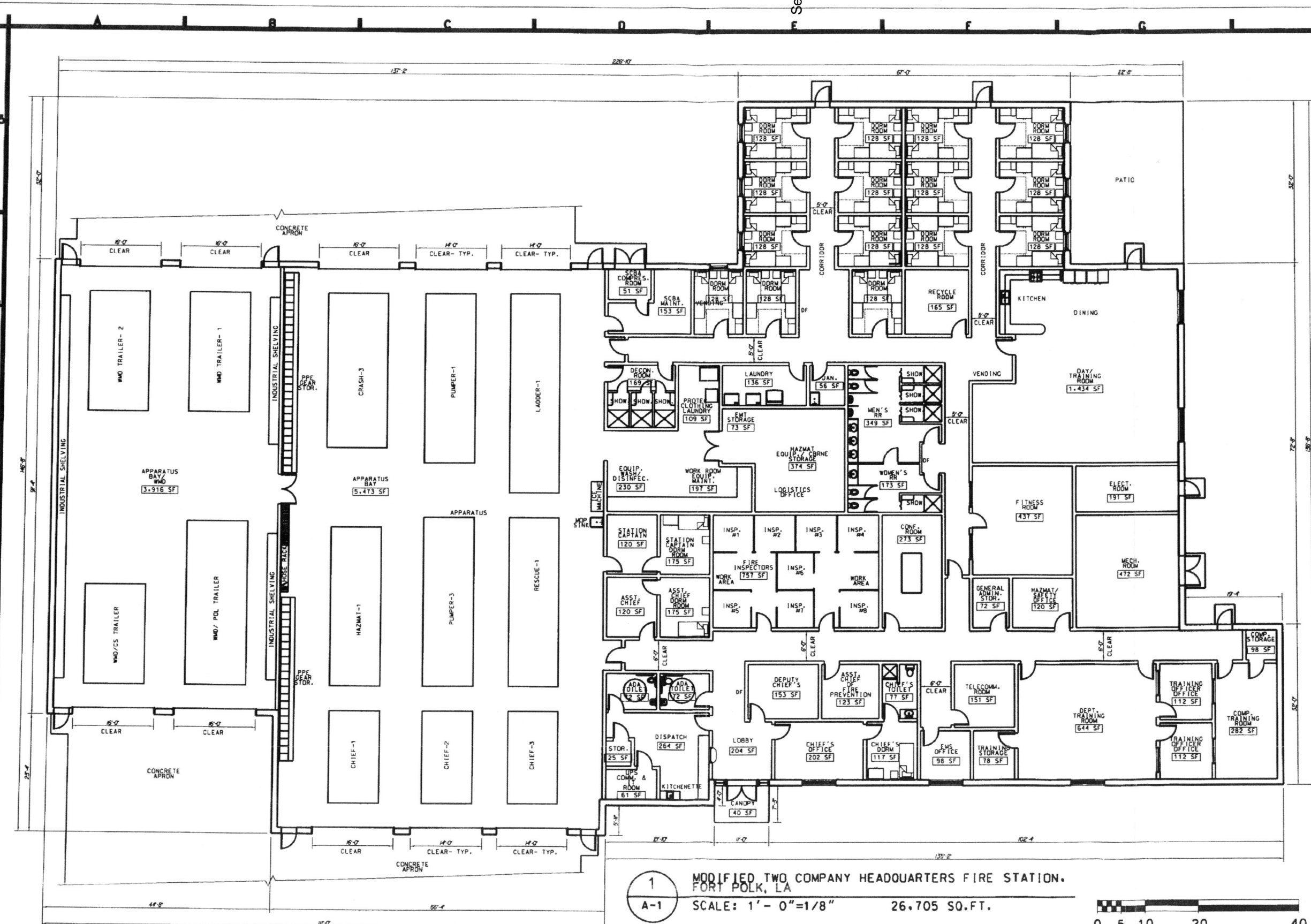
[illegible]

U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE HUNTSVILLE, ALABAMA	Classified by CE AHC-GDSC-A	Date 08 Jun 2009	Rev. 07
	Dec by AHC-GDSC-A	Change file no.	
	Dec by AHC-GDSC-A	Drawing codes	
	Dec by CE AHC-GDSC-A	File names	
	Dec by CE AHC-GDSC-A	File dates	
	Dec by CE AHC-GDSC-A	File dates	

DA FACILITIES STANDARDIZATION PROGRAM  
ARMY FIRE STATION DESIGN GUIDE

Sheet  
reference  
number:  
**A6-HC**  
Sheet 6 of 16

## Section:



**US Army Corps  
of Engineers**

[illegible][illegible]

FOR  
US ARMY FIRE STATION

Steel  
reference  
numbers  
**A-1**  
Sheet 1 of 1

20-Apr-10

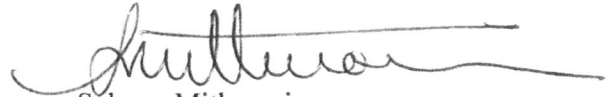
CESWD-PDM

SUBJECT: FY12 PN 017220, Fire Station, Ft. Polk - Waiver Request to Standard Design for CAT Code 73010 - 2 Company Fire Station

1. Reference memorandum, CESWF-EC-AM, 01 Apr 2010 (encl 1).
2. SWF's waiver request is based on the need to provide a facility for a larger complement of fire fighters and instructors than the standard design can accommodate.
3. The analysis and recommendation from the Huntsville Center COS is to concur with the waiver request for PN 17220.
4. The SWD Configuration Control Board recommendation is to concur with the subject Waiver Request.
5. The SWD point of contact is Mr. Saleem Mithwani, (469) 487-7139.

SWD CONFIGURATION CONTROL BOARD:

Terri Nolen  
Business Technical Division

  
Saleem Mithwani  
COS Rep, Military Programs

  
Kathrine Freeman  
SWD Regional Contracting Chief (Acting)

**Roberts, Sharon SWF**

---

**From:** Nolen, Terri L SWD  
**Sent:** Monday, April 12, 2010 8:59 AM  
**To:** Mithwani, Saleem SWD; Freeman, Kathrine SWF  
**Cc:** Heath, Denver S HQatSWD; Billman, Lisa C SWF; Hill, Gail SWF  
**Subject:** RE: Configuration Control Board - PN 17220 Ft. Polk Waiver Request

Saleem--

I appreciate the opportunity we had to discuss this waiver request briefly last week. The request seems reasonable, and the CoS and the GD are in agreement of the way forward. This email is to document my concurrence, since I will be out of the office most of this week.

Thank you--  
-Terri

Terri L. Nolen, P.E.  
Chief, Business Technical Division  
Southwestern Division  
(469) 487-7079  
BB: (817) 239-9728

-----Original Message-----

**From:** Mithwani, Saleem SWD  
**Sent:** Tuesday, April 06, 2010 3:00 PM  
**To:** Freeman, Kathrine SWF; Nolen, Terri L SWD  
**Cc:** Heath, Denver S HQatSWD; Billman, Lisa C SWF; Hill, Gail SWF  
**Subject:** Configuration Control Board - PN 17220 Ft. Polk Waiver Request  
**Importance:** High

Hi Kathy,

Last week I was informed that Denver will be away for a while and you will be filling in for him. One of Denver's role was as a Board member of the Division's Configuration Control Board, which is responsible for reviewing COS Waiver request. The other two members of the CCB are Terri Nolen and myself.

I have recently received the attached Waiver Request. This waiver is requesting a design that is larger than the Standard design for a Fire Station. The COS has concurred - their position paper is attached.

Since this waiver does not seem to have contractual implications, you may want to consider sending your concurrence by e-mail after you have reviewed the request. If you feel we need to discuss, I can convene a Board meeting either by telecon or in person at your convenience.

I am in FWD today and tomorrow, so I will also stop by to discuss this further with you.

Thanks,

Saleem Mithwani, P.E.

Military Program Manager  
US Army Corps of Engineers  
Southwestern Division  
Tel. 469-487-7139

-----Original Message-----

From: Crisp, Adam D SWD  
Sent: Thursday, April 01, 2010 3:13 PM  
To: Mithwani, Saleem SWD  
Subject: Fw: Ft. Polk ESC: Waiver Request  
Importance: High

Fyi we will work together

-----  
Adam Crisp  
SWD Program Manager  
918.669.7394 office  
214.675.3649 cell

----- Original Message -----

From: Guldemon, William M SWF  
To: Crisp, Adam D SWD  
Sent: Thu Apr 01 15:08:36 2010  
Subject: Ft. Polk ESC: Waiver Request

<<WaiverAtt\_Signed Letter.pdf>> Good morning,

Attached is a signed request for a wavier for the "Fire Station" project (FY 12 MCA, PN 017220, P2# 146330) at Ft. Polk.

APPENDIX RR  
SQUARE FOOTAGE SUMMARY  
MODIFIED STANDARD DESIGN



NOTE: These square footages apply to the Modified Standard Design approved for this project, the Fort Polk Modified Two Company Fire Station. Spaces present in the Standard Design may not be present due to design changes. The square footages indicated are Net Square Footages, taken from inside of finish to inside of finish. Assumptions have been made for drawing purposes, and these square footages may be used as a guide. Changes by the Design-Build Team for constructability, to provide thicker or thinner walls, different finishes, accommodate any acoustical treatment, chases, or other changes may affect the Net Square footage indicated. Any such changes will not be considered betterments if the square footage is reduced.

#### FT. POLK AREAS SUMMARY

	DESCRIPTION	NET AREA SF.	
1	Comp. Training Room	291	
2	Comp. Storage	38	
3	Training Officer Office	120	
4	Training Officer Office	119	
5	Dept. Training Room	640	
6	Training Storage	87	
7	Telecom Room	134	
8	Closet	65	
9	EMS Office	127	
10	Chief's Dorm	117	
11	Chief's Toilet	78	
12	Chief's Office	200	
13	Assist. Chief's Office Prevention	130	
14	Deputy Chief's	163	
15	Vestibule	116	
16	Dispatch	224	
17	UPS Comm. & IT Room	63	
18	Storage	35	
19	Shared Toilet	92	
20	ADA Toilet	74	
21	Electrical Room	192	
22	Mechanical Room	474	
23	Hazmat / Safety Office	117	
24	General Admin. Storage	72	
25	Fitness Room	431	
26	Day / Training Room / Dining	1486	
27	Conference Room	275	
28	Work Area A	122	
29	Work Area B	123	
30	Insp. # 1	58	
31	Insp. # 2	58	
32	Insp. # 3	58	
33	Insp. # 4	57	
34	Insp. # 5	57	

35	Insp. # 6	50	
36	Insp. # 7	53	
37	Insp. # 8	53	
38	Assist. Chief	121	
39	Assist. Chief Dorm. Room	120	
40	Station Captain	121	
41	Station Captain Dorm. Room	120	
42	Men's RR	338	
43	Women's RR	166	
44	Logistics Office/Hazmat Equip./CBRNE/EMT Stor.	439	
45	Janitor	57	
46	Laundry	136	
47	Work Room/Equip. maint/Equip. Wash/Pr. Cloth	521	
48	Decon Room	71	
49	Shower	31	
50	Shower	31	
51	Shower	31	
52	SCBA Compress Room	61	
53	SCBA Maint.	164	
54	Dorm Room	137	
55	Dorm Room	139	
56	Dorm Room	134	
57	Recycle Room	177	
58	Dorm Room 1	139	
59	Dorm Room 2	137	
60	Dorm Room 3	137	
61	Dorm Room 4	130	
62	Dorm Room 5	128	
63	Dorm Room 6	128	
64	Dorm Room 7	128	
65	Dorm Room 8	127	
66	Dorm Room 9	127	
67	Dorm Room 10	129	
68	Dorm Room 11	127	
69	Dorm Room 12	127	
70	Apparatus Bay	7167	
71	Apparatus Bay / WMD	3887	
72	Corridor 1-Admin.	908	
73	Corridor 2-Dorms.	1217	
		<b>24506</b>	

APPENDIX SS  
PREFERENCE 1

RELOCATE EXISTING MEMORIAL

## Appendix SS

Relocate existing memorial (See Picture Below) from North Fort Polk Airfield Fire Station and create viewing area within the site of this proposed project. Site should be accessible from main entry walk, include landscaping, lighting & permanent seating. Accent brick Paved inlays to allow for replacing with engraved bricks would be preferred.



## APPENDIX TT

### AMERICAN WATER PERMIT APPLICATION FORM

American Water Military Services Group  
Permit Application for Water or Sewer Tap and/or Line Installation

---

**American Water/ Military Services Group- Utility Owner**  
**Fort Polk, Louisiana**

**Permit Application for Water or Sewer Tap and or Line Installation**

**Application Date:** \_\_\_\_\_

Please check boxes that apply:

Water Tap	Water Line	Sewer Tap	Sewer Line	Temporary	Permanent
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Section #1 – General Information**

**Name of Project Sponsor (funding Sponsor)\*** \_\_\_\_\_

\* - This party is responsible for paying costs incurred by AW

Address \_\_\_\_\_

Phone Number \_\_\_\_\_ Point of Contact \_\_\_\_\_

Project Name \_\_\_\_\_ Project No. \_\_\_\_\_

Peak Water Demand \_\_\_\_\_

Fire Flow Requirements \_\_\_\_\_ @ \_\_\_\_\_ for \_\_\_\_\_ hours

Engineer contact information \_\_\_\_\_

\_\_\_\_\_

**Address/Location of Work** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Is a construction permit needed from the State regulatory agency? ☐ Yes ☐ No

(If 'Yes', AW will be the permittee on the application. The application must be submitted with all required documents to: American Water MSG, 9405 Georgia, Fort Polk, Louisiana 71459

American Water Military Services Group  
Permit Application for Water or Sewer Tap and/or Line Installation

---

Is this a phase of a larger project?

☐ Yes☐ No

(If 'Yes', provide description of whole project.)

**Section #2:****Description of Work** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_**Lowest Building First Floor Elevation** \_\_\_\_\_**Highest Building First Floor Elevation** \_\_\_\_\_**Pipe Sizes Proposed:**

Water Main

Sewer Main

Force Main

Water  
ServiceSewer  
Service**Pipe Material:**

<input type="checkbox"/>	PVC C-900
<input type="checkbox"/>	Ductile Iron
<input type="checkbox"/>	HDPE SDR_____
<input type="checkbox"/>	SDR 21 (Service Line Only)

<input type="checkbox"/>	SDR 26 (Service Line Only)
<input type="checkbox"/>	SDR 35 (Gravity Sewer Less Than 10' Bury)
<input type="checkbox"/>	SDR 26 (Depth of Bury 10'-14')
<input type="checkbox"/>	Type K Copper

**Pipe Bedding Details** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



American Water Military Services Group  
Permit Application for Water or Sewer Tap and/or Line Installation

---

**Fire Hydrant**

Manufacturer \_\_\_\_\_

Model No. \_\_\_\_\_

**Gate Valves**

Manufacturer \_\_\_\_\_

Model No. \_\_\_\_\_

**Hydrant Flow Tests**

Date of Test(s) \_\_\_\_\_

Performed by \_\_\_\_\_

Flow Measured \_\_\_\_\_ GPM

Hydrant No's \_\_\_\_\_

Residual Pressure \_\_\_\_\_

**Backflow Prevention\*****Water Meter**

<input type="checkbox"/>	Provided in Mechanical Room
<input type="checkbox"/>	Exterior to Building
<input type="checkbox"/>	RPZ
<input type="checkbox"/>	DCV

<input type="checkbox"/>	Provided
<input type="checkbox"/>	Not Required

Size \_\_\_\_\_ inch

\* - Must comply with Cross Connection Control Manual and a certificate shall be provided after installation.

**Pumping Facilities\***☐ Water Booster Station☐ Sewage Pump Station

\* - Design Report and all civil, mechanical, and electrical drawings to be provided.

**Quantities of Materials – Provide a tabulation of pipe (by size and material), manholes, valves (by size), fire hydrants, cleanouts, and other system features.**

American Water Military Services Group  
Permit Application for Water or Sewer Tap and/or Line Installation

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**Section #3: - Project Schedule**

Submit permits to regulatory agency \_\_\_\_\_

Start Construction \_\_\_\_\_

Complete Construction \_\_\_\_\_

**Section #4:**

Construction Cost Estimate \$ \_\_\_\_\_

**Section #5:**

If work is not going to be performed by Application Company Identification of Subcontractor:

Company Name \_\_\_\_\_

Address \_\_\_\_\_

Phone Number \_\_\_\_\_

Contact Name \_\_\_\_\_

**Section #6:****Note to All Contractors:**

All work must be constructed in accordance with American Water's Standard Specifications for Water and Sewer Facilities (request copy if needed).

No Work is to be started until Permit has been issued By American Water.

Complete set of Plans is to be submitted with this application.

No work is to be back filled until American Water has inspected the work.

No actual water or sewer taps into the system with out American Water present.

Survey showing buildings/ locations of other Utilities to be submitted with permit application.

Work Plan Drawings to be submitted with permit application.

All work plans are to be stamped by a Professional Engineer in Louisiana where the project is being performed (does not apply to service line installation).

American Water Military Services Group  
Permit Application for Water or Sewer Tap and/or Line Installation

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Upon Completion of Work the following **must** be submitted in order to make connection to water or sewer system:

- Pressure Test Record
- Disinfection Record (water)
- Bact T Test Results (water)
- Vacuum Test Record (manholes)

All labor is to be in accordance with Davis Bacon Act

It is the responsibility of the Contractor for all Utility Call Outs.

All work is to be inspected by American Water.

Three day notice for Inspection is required.

Inspection Notice to be given to: **(337) 537-1161 or 337-537-1423**

It is the responsibility of the Contractor to schedule any re-inspections and payment of re-Inspection Fees

**AW Contact Information, Fort Polk:**

Ralph Stillwell  
American Water O&M, Inc  
Ralph.Stillwell@amwater.com

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**For American Water Use only:**

		Date
Required received:	<input type="checkbox"/>	_____
Plans approved and project approved for construction:	<input type="checkbox"/>	_____
Permit Received:	<input type="checkbox"/>	_____
Testing results received (water) and meet required standards:	<input type="checkbox"/>	_____
Connection to existing system approved:	<input type="checkbox"/>	_____
As-built plans received:	<input type="checkbox"/>	_____

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Bobby Jindal  
GOVERNOR**STATE OF LOUISIANA  
DEPARTMENT OF HEALTH AND HOSPITALS**Alan Levine  
SECRETARY**PROCEDURES FOR SUBMITTING PLANS AND SPECIFICATIONS  
FOR REVIEW AND APPROVAL OF  
WATER AND SEWERAGE FACILITIES**

The following procedures shall be used when submitting plans and specifications for public water systems and sewerage facilities for review and approval by the DHH/Office of Public Health. This does not include, however, projects involving the technology of individual home sewage disposal or systems at or below 3,000 gallons per day (gpd). For projects such as those, the local parish health unit should be contacted.

The State Sanitary Code requires that, prior to the start of constructions, approval by the Department of Health and Hospitals (DHH) be obtained for plans and specifications of all sewerage facilities and for all public water systems. This applies to new facilities as well as any significant modifications or extensions. Public water supplies are defined as those which have a minimum of 15 service connections or regularly serve an average of at least 25 persons daily at least 60 days out of the year. Private building plumbing and service lines do not normally require prior DHH approval; however, the installation must conform with the requirements of the Louisiana State Plumbing Code, 2000 Edition [= Part XIV (Plumbing) of the Louisiana State Sanitary Code (LAC 51:XIV)].

The plans and specifications for all projects having a design average flow of 3,000 gallons per day or less, or an equivalent organic loading, must be submitted to the local parish health unit. For larger projects, the plans and specifications must be submitted to the Engineering Services Section of the Regional Office in your area.

Following are some common maximum project sizes to be handled by the local parish health units:

3,000	gallons per day design average flow (sewage)
15	residential users
75	office or factory workers (no food handling or showers)
5	trailer sites
5	two bedroom apartments

In order to expedite our handling of your projects, the following suggestions are offered regarding plans and specifications which you submit for approval to the Department of Health and Hospitals:

1. A single set of detailed plans and specifications should be submitted at least 60 days prior to the time the approval, comments, or recommendations are desired by the owner. Plans must be signed, stamped, and dated by a registered professional engineer, licensed to practice in the State of Louisiana.
2. A detailed design summary package for all water and sewerage facilities must be submitted. The applicable design summary forms, which are attached, should be used. These forms

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however, are structured for small and medium sized projects and, therefore, additional information may be needed for larger projects involving water and sewerage facilities. The design summary package is not a review tool therefore any details relevant to the review should also be included in plans and specifications.

3. Submit a vicinity map showing the project location, the sewage treatment facility location, discharge point, and receiving stream. Include a tracing of the outfall to the first perennial (non-intermittent) waterway in the path of the projected outfall.
4. Submit plot plan identifying the lots and including adjacent property usage and ownership.
5. Submit layout drawings of the sewage collection and water distribution mains, showing all pump stations, manholes, clean-outs, hydrants, valves, pipe size and materials, sewage main depth, slopes and invert elevations, water main depths, etc., as well as the sewage treatment facility location and the water well location. Collection line profiles may replace some of these data. Details that do not pertain to the sanitary features need not be included, such as electrical, storm water drainage, and street details.
6. Submit detailed drawings of sewage treatment, collection, and pumping facilities and water well, storage and treatment facilities with plan, profile, and end views, depicting dimensions, capacities, materials, and elevations referenced to the North American Vertical Datum of 1988 (NAVD88).
7. Where lots are sold, evidence must be submitted showing that the facilities will be maintained in perpetuity. Ownership by a governmental body is one way to do this. As a prerequisite to our approval of privately owned facilities, the owner must be set up to own, operate, and maintain the facilities rather than the developing company. In addition to this agency's approval, state law requires a profit type utility serving more than ten customers to register with the Louisiana Public Service Commission.
8. For extensions to an existing system, information pertaining to the existing system should be submitted. Please include present population served, design capacity of present system, capacity of lift stations, etc. The ability of the existing system to absorb the extra loading should be documented. Also, if the extension is outside the boundaries of a municipality or district, a letter of acceptance from that authority should be included.
9. For a sewage treatment plant, a complete description of the effluent outfall pattern shall be submitted. Depictions, detailed descriptions and definitions of all servitudes or rights-of-way encountered for the entire outfall path shall be provided. Written verification/authorization from the legal entity(ies) associated with said servitudes indicating no objection to the discharge of treated sewer effluent into said servitudes shall be submitted. Written verification/authorization from the local governing body indicating no objection to the proposed point of discharge and outfall path shall be submitted. If the treated effluent will encounter a Louisiana Department of Transportation and Development (LDOTD) right-of-way, a letter of no objection from LDOTD for the discharge of treated sewer effluent into the LDOTD right-of-way shall be provided. It is important that the plant not discharge across privately owned property without benefit of easement before reaching a perennial stream (See Item 3 above).

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10. Elaborate on whether or not the proposed water well and water treatment facilities and sewage treatment and pumping facilities are located above the 100-year flood plain. If not, explain the protective measure to be used. Floodplain, Base Flood Elevation/100-Year Flood Elevation, and elevations of the proposed structures shall be shown on the plans.
11. The review of the plans and specifications are made, with some exceptions, in accordance with the "Recommended Standards for Wastewater Facilities", 1990 Edition, and the "Recommended Standards for Water Works", 2003 Edition, promulgated by the Great Lakes - Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers [available from the Health Education Services - P.O. Box 7126 - Albany, NY 12224 ([www.hes.org](http://www.hes.org))]. Design standards for water well construction is contained in the "Louisiana Water Well Rules, Regulations, and Standards", November, 1985 Edition (LAC 56:I), promulgated by the Louisiana Department of Transportation and Development, Water Resources Division. Additional Design Standards for water and sewerage facilities are given in Parts XII and XIII, respectively, of the State Sanitary Code. The state sanitary code is available at <http://www.dhh.louisiana.gov/offices/?ID=242>.
12. The Louisiana Department of Environmental Quality (DEQ) is responsible for determining the water quality requirements in the State for all wastewater discharges as well as for the issuance of wastewater discharge permits. State law requires that a discharge permit be obtained from the Department of Environmental Quality, Office of Environmental Services, Water & Waste Permits Division, P. O. Box 4313, Baton Rouge, LA 70821-4313 (Phone # 225-219-3181) prior to discharge of any wastewater. You may also be required to obtain a federal permit for the wastewater discharge, about which DEQ can advise you.
13. Federal mandate for DEQ to establish Total Maximum Daily Loads (TMDLs) for all water bodies in our state have resulted in lower limits being established for wastewater dischargers to specific receiving streams based on what organic loads the receiving stream may already have and other stream specific data. A copy of your Administrative Completeness Determination letter from DEQ or existing DEQ discharge permit shall be submitted along with this design summary package for all permits involving a wastewater treatment facility. Regarding this you should contact DEQ Water Permits Division, PO Box 4313 Baton Rouge, LA 70821-4313 whose phone number is 225-219-3181.
14. If the project involves work or structures in the waters of the State including adjacent wetlands, a permit from the U. S. Army Corps of Engineers may be required. Examples, of this are water intake structures, pipeline stream crossings, and sewage plant out fall structures. Regarding this, you should contact the New Orleans District Corps of Engineers, Department of the Army, P. O. Box 60267, New Orleans, LA 70160. Attention: LMNOD-SP. Or the Vicksburg District Corps of Engineers, Department of the Army, 4155 Clay Street, Vicksburg, MS 39183-3435. Attention: CEMVK-OD-F
15. If the project would have an impact on any surface water body that has been designated as a Scenic River, then a permit may be required from the Louisiana Department of Wildlife and Fisheries. Regarding this you should contact the Ecological Study Section, Louisiana Department of Wildlife and Fisheries, P. O. Box 14526, Baton Rouge, LA 70898.
16. The Operator for Public Water Systems and Community Sewer Treatment and Collection Systems shall hold a current and valid Professional Certification (s) of the required category as set forth in R.S. 40:1141-1151. Additionally, an Operator shall demonstrate that when not



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present at the facility, he or she is capable of responding to that location within one (1) hour of being notified that his presence is needed. For more information regarding Operator Certification, please call the Department of Health and Hospital's Office of Public Health Operator Certification Unit at (225) 342-7508.

17. Once the project is completed, the last page titled "CERTIFICATION OF CONSTRUCTION" shall be completed, sealed and signed by the Engineer-of-Record and signed by the contractor then submitted to the office from which the permit was issued. Your permit is not considered final until this step has been completed.

# APPENDIX – UU

Changes to Section 01 45 04.00 10

## Changes to Section 01 45 04.00 10 – Contractor Quality Control

1. In addition to the requirements in paragraph 3.4.2, the CQC System Manager may also be a construction person with a minimum of 10 years construction experience. The CQC Manager must have a minimum of 5 years experience in construction quality control.
2. The following sub-paragraphs in paragraph 3.4.4.1. Area Qualifications are not applicable to this project :
  - 3.4.4.1.1. Civil
  - 3.4.4.1.4. Structural
  - 3.4.4.1.5. Plumbing
  - 3.4.4.1.6. Concrete
  - 3.4.4.1.8. Design Quality Control Manager
  - 3.4.4.1.9. Registered Fire Protection Engineer

# APPENDIX – VV

01 35 12.00 44 – Special Project Procedures for  
Fort Polk

## SECTION 01 35 12.00 44

## SPECIAL PROJECT PROCEDURES FOR FORT POLK

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

ANSI/BHMA A156.2 (2003) Bored and Preamsembled Locks and Latches

ANSI/BHMA A156.3 (2008) Exit Devices

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

## SD-01 Preconstruction Submittals

## Excavation And Trenching.

Secure required permits prior to performing any excavation or trenching on the installation.

## SD-07 Certifications.

## Hazardous Material Content.

For applicable materials, furnish manufacturer's certifications that materials installed on this project do not contain asbestos or the lead content does not exceed 0.06 percent (600 ppm).

## Solid Waste Disposition

## Termite Control

## SD-11 Closeout Submittals

Asbestos Certification Letter.  
CADD And GIS Deliverables.

## 1.3 DIRECTIONS TO FORT POLK AND LOCAL MOTELS

- a. The Eastern Area Office is located at 2315 Service Command Loop, Bldg.

4740, Fort Polk, LA 71459. The office telephone no. is (337) 531-2933. See local area maps.

Driving directions from Hwy 171: East on Entrance Road (Name changes to Louisiana Avenue after entering Fort Polk), stay on Louisiana Avenue; turn right on to Texas Avenue (at 7th Traffic Light). 1st left will be Service Command Circle. 1st parking lot on left will be Building 4740.

b. For base access, proceed to the Fort Polk Visitors Center located 2 miles from Highway 171 (on Entrance Road). Valid insurance, registration, and driver's license are required for a one day visitors pass. For more information, contact the Fort Polk Visitors Center at (337) 531-4978.

c. Web Sites:

Ft. Worth District Website: <http://www.swf.usace.army.mil/>  
Joint Readiness Training Center and Fort Polk, LA:  
<http://www.jrtc-polk.army.mil/>  
Newcomers: [www.militaryonesource.com](http://www.militaryonesource.com)

d. Hotels located in Leesville, LA

Best Western-337-392-1672  
Holiday Inn Express-337-239-2122  
Country Inn-337-238-3506  
Landmark-337-238-2854  
Days Inn-337-239-2612

e. Hotels located in DeRidder, LA

Stagecoach Inn- 337-462-0022  
Country Inns of DeRidder-337-462-3450

#### 1.4 INSTALLATION ACCESS - CONTRACTOR PERSONNEL (Mar 2011)

Installation Access - Contractor personnel, with exception of Rapid Gate Badge holders, requiring access to Fort Polk must be on an access control roster. These rosters are used by Fort Polk personnel to verify legitimate need for contractors requiring access to the Installation. Primes are responsible for submitting information for their subcontractors. All access rosters, as well as updates, will be submitted electronically. Rosters will be submitted by e-mail to the following addresses: [penelope.z.smith@usace.army.mil](mailto:penelope.z.smith@usace.army.mil) cc: [toni.l.schermerhorn@usace.army.mil](mailto:toni.l.schermerhorn@usace.army.mil). **PLEASE INCLUDE IN THE SUBJECT LINE OF YOUR EMAIL THE WORDS: ACCESS ROSTER. In order for an access control roster to be accepted the roster format can not be modified and data must be entered in each column for each employee listed.** A complete roster should be submitted by the 5th working day of each month. **Indicate key personnel that require a 6 month pass with purple / lavender highlight.** Additions and deletions will be submitted daily, on an as-needed basis. Should you have both additions and deletions, both can be submitted on the same document, **with additions highlighted in yellow and deletions highlighted in red.** Any organizations submitting electronic access control rosters are required to provide personnel listed on the roster with a copy of the privacy act (provided in Precon packet). Rosters should be submitted 5 days in advance of access to allow time to consolidate the new information in the data base and validate each roster. Once an employee is on the roster they can obtain a vehicle pass at Building 1830, Consolidated In and Out Processing, Telephone: 531-0380. The vehicle pass duration for key personnel will be 6 months and for all

others 30 days. To receive an electronic copy of the Access Roster form, contact penelope.z.smith@usace.army.mil, or toni.l.schermerhorn@usace.army.mil.

Personnel that have Rapid Gate Badges do not have to be listed on the access roster and are not required to have vehicle passes. More information concerning the Rapid Gate Program may be obtained by calling 1-877-727-4342.

#### 1.5 CONTRACTOR LOTS (March 2011)

Contractor lots are available for use during the period of performance on a space available basis. The contractor will have to enter into a lease agreement with the local governing agency, and follow the requirements set forth in such agreement. Coordination with the local governing agency shall be facilitated through the Contracting Officer. Additionally all requirements of contractor temporary facilities located in other portions of this contract shall apply to these lots as well.

#### 1.6 EXCAVATION AND TRENCHING

Excavation and/or trenching operations to be performed outside the (designated) limits of construction, for utility tie-ins, correction of drainage problems, or for other reasons as may be required under the terms of the contract, shall not be performed without a permit; and such work shall only be performed during normal duty hours unless otherwise approved by the Contracting Officer. Permit requests must be submitted to the Contracting Officer a minimum of 14 calendar days prior to commencement of excavation or trenching operations beyond construction limits.

#### 1.7 PROTECTION OF THE RED-COCKADED WOODPECKER (RCW)

##### 1.7.1 General

Construction activity shall be conducted in a manner which minimizes impacts to the RCW. The boundaries of RCW clusters are located as indicated in the contract drawings. Vehicle parking areas, material stockpiles, and portable toilets are prohibited within RCW clusters.

##### 1.7.2 RCW Clusters

No construction activity shall occur within an RCW cluster unless indicated in the contract drawings. When work is indicated within an RCW cluster, no tree shall be removed from the cluster without first contacting the Contracting Officer and receiving approval from the Fort Polk Environmental and Natural Resources Management Division (ENRMD). When working within an RCW cluster, no earth-disturbing activities shall occur within 15 meters (50 feet) of a cavity tree. All cavity trees are marked by a white paint band. During the nesting season of 1 April through 30 June, no construction activity shall occur within an RCW cluster until ENRMD marks the nesting trees and the Contracting Officer gives approval, after which no activity shall occur within 60 meters (200 feet) of the marked nesting trees. Activity within the 60 meters (200 feet) limit shall not resume after nesting season until ENRMD determines that the fledglings have left the nests and the Contracting Officer approves resumption of the work. At all times, construction activity within RCW clusters shall start no earlier than 30 minutes after sunrise and shall halt at a minimum of 30 minutes prior to sunset. Any construction equipment which must operate within a cluster shall be moved outside of the cluster at the end of each day.



## 1.8 DISPOSAL OF DEMOLITION AND CONSTRUCTION DEBRIS

Unless otherwise indicated, demolition and construction debris shall be disposed of outside the limits of Government controlled land and the Contractor shall comply with all local and state regulatory requirements in his disposal operations.

## 1.9 HAZARDOUS MATERIAL CONTENT

Materials installed on this project shall conform with the Consumer Product Safety Commission's safety standards, especially materials used primarily for roofing, building and roofing insulation, joint sealants, elastomeric joint sealants and calking, gypsum board, plaster, paint and coatings (interior and exterior), fireproofing, acoustical ceiling systems, acoustical wall systems, mechanical and electrical equipment insulation or pipe wrappings. Submit certifications from material manufacturers attesting that their materials that are installed on this project, as applicable, do not contain asbestos and that the lead content does not exceed 0.06 percent (600 ppm) by (dry) weight of the material's non-volatile content.

## 1.10 ASBESTOS CERTIFICATION LETTER

Prior to the final acceptance inspection, furnish a letter certifying that no asbestos-containing materials were installed in the project. The letter format is attached at the end of this Section.

## 1.11 SOLID WASTE DISPOSITION

The Army requires that the installation track all solid waste generated (disposed and recycled) at Fort Polk (DA PAM 200-1 Section 5-9i), which includes construction and demolition debris. As a result, contractors are required to report to DPW-ENRMD the quantities of solid waste taken off the installation. The requirement to report to DPW-ENRMD is found in JRTC and Fort Polk Regulation 200-1 Section 9-4d(2) and the Contractor's Environmental Guide. Submit the report(s) to the Contracting Officer by the 5th working day of each month; the Corps will forward the report(s) to the Installation environmental office. See the Solid Waste Disposition form attached at the end of this Section.

If you have any questions or require additional information, please call the installation environmental office at 531-7542 or 6008.

## 1.12 TERMITE CONTROL

The Fort Polk Installation Pest Management Plan (IPMP) approves the use of the following two termiticides for use on Fort Polk:

Termidor 80 WG (EPA 7969-209) (BASF Corp.)  
Termidor SC (EPA 7969-210) (BASF Corp.)

## 1.13 FORT POLK CADD AND GIS DELIVERABLES

### 1.13.1 Data Standards

Spatial Data Standard for Facilities, Infrastructure and Environment (SDSFIE) current release shall be followed for Geospatial database structure and attributes to allow for data integration. CADD data shall be

documented according to the current release of the Architecture, Engineering and Construction (AEC)/CADD standards. All GIS and CADD data will be documented in accordance with the Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata.

#### 1.13.2 Coordinate System Projection and Datum

All GIS data shall use the Universal Transverse Mercator Zone 15 North projection, World Geodetic System of 1984 (WGS84) datum, and the North American Vertical Datum of 1988 (NAVD88) using Metric as the working units to ensure data alignment and accuracy.

CADD data shall be geo-referenced in the State Plane Coordinate System 1983, using the North American 1983 Geodetic Datum with Survey Feet as the working units. The projection, datum and coordinate system must be defined and then documented in the metadata for both CADD and GIS and provided whenever the data is distributed.

#### 1.13.3 CADD & GIS Deliverables

All CADD deliverables of As-built drawings shall be delivered in a MicroStation V8 .DGN compatible format utilizing survey feet for the working units. A seed file can be obtained from the Fort Polk DPW CADD/GIS Center. GIS deliverables shall be delivered in current GeoMedia file format or an ArcView shape file format.

#### 1.13.4 Point Of Contact

Contact: Fort Polk DPW CADD/GIS Center 337-531-6846

#### 1.14 WATER AND WASTE WATER (Feb 2011)

##### **Standard Operating Procedure For Projects requiring Water or Waste Water Services**

##### 1.14.1 Purpose:

To outline requirements of Construction Projects connecting to American Water's water and waste water systems.

##### 1.14.2 Regulatory and Contractual Requirements:

American Water Operations and Maintenance, Inc. (AW) is the owner and operator of the water and wastewater systems. Defense Energy Support Center (DESC) privatization contract (SP0600-08-C-8257) makes American Water responsible for evaluating the impacts of projects on the water and wastewater systems, designing system upgrades, and performing the upgrades necessary to provide dependable water and wastewater services at a reasonable cost. The contract makes AW responsible for "performing the necessary work on all necessary additions or modifications up to the established points of demarcation for new construction".

Louisiana Sanitary Code Title 51 Subpart XII paragraph 105 requires the owner of the water system to obtain LDHH approval prior to the start of construction for modifications to the water system that affect the capacity, hydraulic conditions, functioning of treatment processes or quality of finished water. All projects using water/wastewater services will require AW and LDHH approval. Louisiana Sanitary Code requires this approval to be obtained prior to start of construction.

**1.14.3 LDHH project approval process:**

a) The Project Manager shall determine the water and waste water requirements of the project and involve American Water in the project upon project conception.

- 1) Maximum water flow
- 2) Minimum pressure
- 3) Average daily water usage
- 4) Sitemap indicating "Point of Demarcation" GPS location of "Point of Demarcation" for both water and wastewater connections including elevations. Note: The wastewater elevation must be coordinated with American Water to ensure proper flow.
- 5) Target start of construction date.
- 6) Date service connections are required, 180 days prior to connection when possible. Note: Any change to the flow or pressure requirements will require new AW and LDHH approval. Changes could also impact timing and costs.

b) The Project Manager shall supply American Water Contract Contracting Officer Representative (COR) the information on the project's water and waste water requirements. (See AW Contract, Request for Action)

c) American Water will evaluate the projects water and waste water loading on the water and waste water systems and determine system upgrades necessary for the project.

d) American Water will submit the system upgrade requirements to the COR (see AW Contract, Request for Action).

e) The project manager will request firm costs prices for the system upgrades. All requests for proposals (RFP) will come from DESC to AW via Fort Polk COR. (FFP requires minimum 60 days, depending on size of project)

f) The Project Manager will award the systems upgrades to the appropriate party.

g) The party performing the system upgrades will submit the completed design drawings to American Water for review. The design drawings must be 100 percent drawings signed and stamped by a Licensed Louisiana P.E. These drawings must be submitted 8 weeks (2 week AW review and 6 week LDHH turn around) prior to the start of construction to allow for LDHH approval.

h) American Water will manage the process (see AW Contract, Fort Polk Design Guide) of obtaining LDHH approval and inform the COR in writing that construction can start.

i) Fire Flow requirements for any proposed structure (flow rate, duration, and pressure at point of delivery).

j) All future expansion expected or otherwise anticipated by the project (this must be addressed as phased construction or not assumed).

Note 1: The project manager is responsible for identifying all water and sewer requirements. The following information must be provided to American Water early enough for American Water to determine system upgrades required

in step "c" above.

The following additional information should be provided if available:

- o Hydraulic Model results

#### 1.14.4 DPW Points of Contact:

Close coordination must be maintained with applicable organizations of the W-3 working group. Organizational points of contact are listed below:

DES-Fire Department	531-2026
DES-Physical Security	531-4913
DPW-Engineering	531-6186
DPW-ENRMD 531-6008 DPW-OMD	531-2421
DPW-Planning	531-6103
Preventive Medicine-EH	531-4846
American Water	537-1161

#### 1.14.5 **This SOP will remain in effect until suspended or rescinded.**

R. ELLIS SMITH  
Director of Public Works

#### 1.14.6 American Water (AW)'s Design Specifications

American Water's design specifications are located at the following Internet link:

<http://www.amwater.com/products-and-services/federal-services/military-services/design-s>

#### 1.15 DOOR HARDWARE (Sep 2010)

Unless otherwise required by project requirements, hardware shall conform to the current ANSI/BHMA standards, grade 1. Locks, cylinders, and cores shall comply with ANSI/BHMA A156.13, Mortise Locks & Latches Series 1000, ANSI/BHMA A156.2 Bored and Preassembled Locks and Latches, and ANSI/BHMA A156.3 Exit Devices. Cylinders shall have key removable type cores. Cores shall have not less than seven pins. Extensions of the existing keying systems shall be provided. Cylinders and cores for locksets other than those for mechanical rooms shall be manufactured by Best Lock Corporation to extend the existing Base Keying System. Locksets for mechanical rooms only shall be keyed to the existing Post utilities master keying system, consisting of locksets manufactured by Arrow Lock Co., Keyway K-7; furnish keys "O" bitted. Disassembly of knob or lockset shall not be required to remove core from lockset. All locksets, exit devices, and padlocks shall accept same interchangeable cores.

a. Cores and cylinders shall fit locksets without the use of adaptors and without play. The key shall easily lock and unlock the lockset without binding or other difficulties. Control key shall easily remove and install cores.

b. Locks shall be keyed in sets or subsets in accordance with the approved schedule. Furnish locks with the manufacturer's standard construction cores and key system. Send permanent cylinders, cores, keys, and the lock set-up code to the Contracting Officer by registered mail or other approved means.

c. Furnish a quantity of key blanks equal to 20 percent of the total number of file keys.

d. All keys shall be marked with "U.S. GOVERNMENT - DO NOT DUPLICATE". Do not place room number on keys other than control/core keys. Stamp all control/core keys with building code and building number, and the letter "C".

e. All keys shall be stamped with 1/16" to 1/8" high characters.

f. Furnish keys to the Contracting Officer arranged in a container suitable for key control system storage in sets or subsets as scheduled.

g. Closers: BHMA A156.4, Surface type closers shall be Grade 1, Series C02000 Full Cover with options PT-4H, Size 1 or 2 through Size 6, and PT-4D with back check position valve. Provide with brackets, arms, mounting devices, fasteners, full size covers, except at storefront mounting, pivots, cement cases, and other features necessary for the particular application. Provide manufacturer's 10 year warranty.

(1) Closers for outswinging exterior doors shall have parallel arms or shall be top jamb mounted. Provide narrow projection closers for doors close to a wall so as not to strike the wall at the 90-degree open position.

(2) Closers on doors accessible to the physically handicapped shall have the closing force set for a push-pull of 2.27 kg (5 pounds) applied at the knob or handle for interior doors; for exterior doors, set to the minimum required to relatch the door.

## PART 2 PRODUCTS (NOT APPLICABLE)

## PART 3 EXECUTION

### 3.1 FORMS

#### 3.1.1 Asbestos Certification Letter

#### CERTIFICATION LETTER

Project Name: \_\_\_\_\_

Name of Contractor: \_\_\_\_\_

Project Contract/Delivery Order Number: \_\_\_\_\_

Facility Number: \_\_\_\_\_

Date: \_\_\_\_\_

To Whom It May Concern:

This letter is to certify that the project indicated above has been constructed using no asbestos-containing materials in accordance with the design requirements.

Sincerely,

Typed Name: \_\_\_\_\_

Written / Typed Name: \_\_\_\_\_

## 3.1.2 SOLID WASTE DISPOSITION (Mar 2011)

Contractor Name, address, phone number, contract number:

Contractor Name, address, phone number, contract number	Date	Name of Contractor	Name of Disposal Facility / POC	Disposal or Recycle Transaction	Cubic Yards
<b>Concrete</b> (Cubic Yds) per haul					
<b>Asphalt</b> (Cubic Yds ) per haul					
<b>Routine Mixed Debris</b> (Cubic Yds per					
<b>Asbestos Abatement</b> ( lbs per ticket)					
<b>Universal Waste</b> ( lbs per ticket)					
<b>Land Clearing Debris, Stumps</b> (Cubic Yds per haul)					
<b>Concrete:</b> Goes to crushing yard off of Texas Ave					
<b>Asphalt:</b> Call COE Office for Info					
<b>Routine Mixed Debris:</b> Contractor option to permitted facility					



Contractor Name, address, phone number, contract number	Date	Name of Contractor	Name of Disposal Facility / POC	Disposal or Recycle Transaction	Cubic Yards
<b>Asbestos Abatement:</b> Permitted facility of choice					
<b>Universal Waste:</b> Contractor option at permitted facility					
<b>Land Clearing Debris, IE stumps etc:</b> Should be taken to chipping operation for recycle credit if available					

-- End of Section --